Increasing Participation in Higher Education

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BP Educational Service

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First published 1989

ISBN 0 86165 163 4

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Foreword

"One of the single most consistent messages from industry is that Britain does not educate enough people to a high enough level. In developing our programme of support for further and higher education in the UK we had no difficulty in agreeing that this message should feature as a major priority.

We were however a good deal less confident that we understood enough about the nature of the problem, or how a Company such as ours could make a useful contribution towards its solution. Thus we commissioned the study from which this Report derives primarily in order that we should be better informed, and secondly to help guide our further policy debate. We specifically asked that the findings should be presented with the needs of an interested but non- specialist audience in mind.

The presentations Professor Smithers and Dr Robinson made to us were both enlightening and stimulating. They tackled the many difficult issues involved with refreshing objectivity and clarity. Their recommendations helped us to define a strategy for our own FHE support programme. We believe this Report could make a significant contribution to similar debates elsewhere and that it therefore deserves a wide readership."

C. P. King
Director Europe, The British Petroleum Co plc.
Chairman, BP Management Board for Further and Higher Education

Preface

This brief report sets out, we hope in an accessible way, our thoughts on increasing participation in higher education. The first five chapters summarise the numerical context and in the following four we ask, in turn, what does widening access mean, what is being done, how might the system be improved, and how can we get people to raise their sights.

The report was originally prepared as a briefing document for the Further and Higher Education Board of British Petroleum, which asked that the material should be made more widely available. We should like to thank all those people, too numerous to mention individually but who will know who they are, who gladly gave of their time to provide information and help us shape our thinking. Especial thanks though to Jeremy Nicholls, Secretary of the FHE Board, whose idea this was and who helped us to see it through. We are grateful to BP for bringing out this publication but must emphasize that the views are ours and not company policy.

Alan Smithers
Pamela Robinson
August 1989

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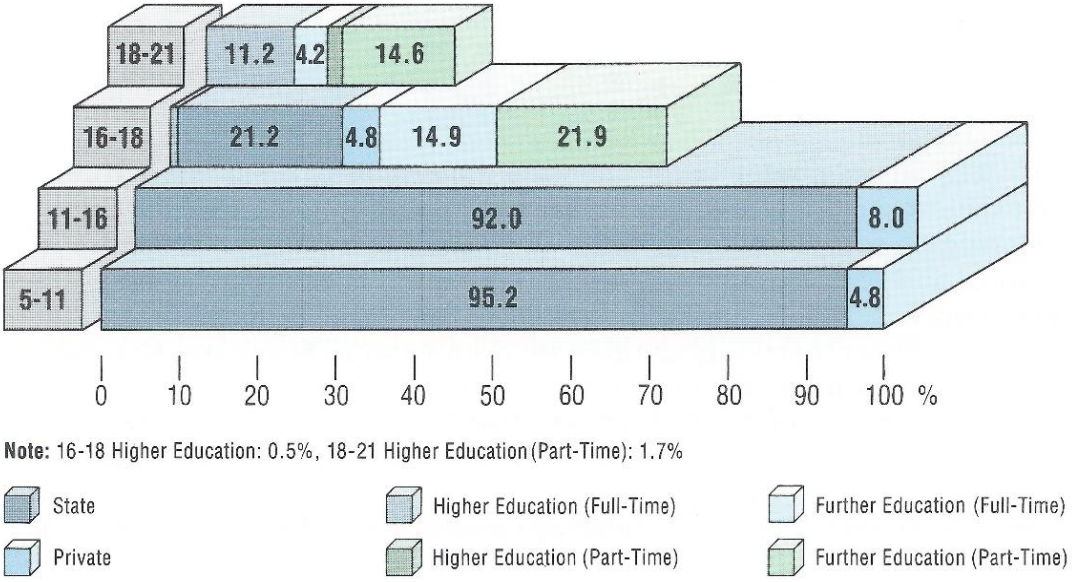
I. The Education System

1.1 The English education system is selective and specialised. Its selectiveness leads to relatively few young people staying on at school or going on to college beyond the age of 16, and its specialised nature means those that do are not necessarily taking the subjects that the country[1] wants.

1.2 In *Figure 1.1* the education system in the UK is represented as a series of steps with full-time attendance shown in black/blue and part-time in green. The lengths of the steps correspond to the extent of participation. The steps for the primary (5-11 years) and compulsory secondary (11- 16 years) age ranges represent the official position, but the Senior Chief Inspector's[2] report remarked on the high level of truancy which may reach 50 per cent of some classes. About 1 in 20 of pupils of primary age attend private schools and this proportion nearly doubles in secondary education 11-16.

Figure 1.1: Participation in Education in the UK, 1986-7



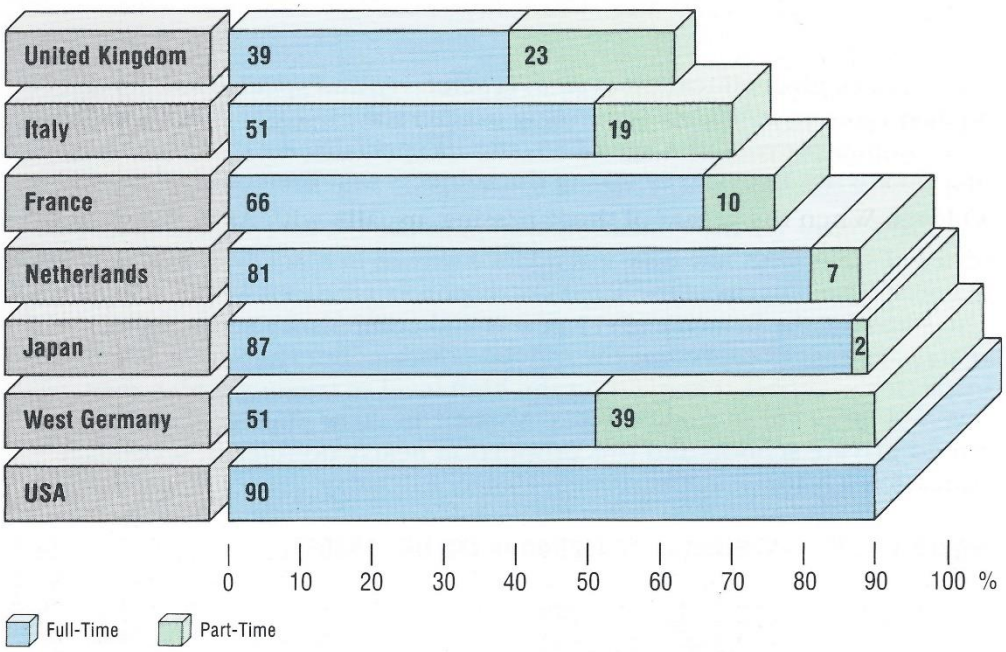
Source Material: Education Statistics for the United Kingdom (1988), London HMSO.

1.3 Beyond 16, the desire of young people to escape from school is overt. Only about a quarter (with a fifth of those now in private schools) remain at school and 15 per cent go on to further education full-time. Another 20 per cent continue part-time.

1.4 After school or FE college about 12 per cent of the age group move on to higher education. Some enter after the age of 21 as mature students so that, at present, the overall participation rate in higher education is about 14 per cent.

1.5 Compared with other advanced industrial nations, participation in education and training in the UK is low. This is illustrated for the 16-18 age range in *Figure 1.2.* Here the UK comes out on top, but this, in this instance, is a bad place to be since it means we are the lightest and least involved. The USA, West Germany, japan and the Netherlands, with their various education systems, all manage to ensure that about 90 per cent of the 16- 18 age range is participating in education and training, either full-time or part-time. Twenty years ago the French staying-on rate was as low as ours is today, but they have raised it to 70 per cent and aim to go higher, not by diluting their prestigious baccalauréat, but by adding a technical alternative.

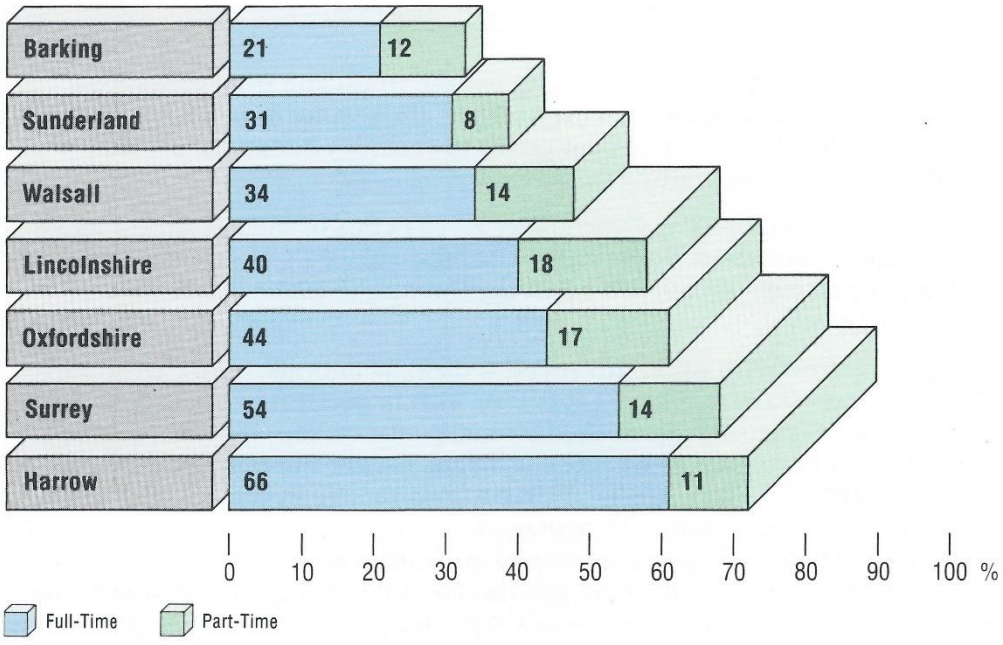
Figure 1.2: Education and Training 16-18 in Selected Countries, 1981



Source Material: Statistical Bulletin 10/85, London DES.

1.6 Why young people in the UK should be so disinclined to continue their education and training is not clear. There is considerable variation in staying-on rates in different parts of England so a number of factors - personal and social, as well as the way education is organised - are likely to be involved. As we can see in *Figure 1.3*, the local authorities with the highest and lowest staying-on rates are both London boroughs, Harrow and Barking, with, incidentally, Brent rivalling Harrow for top spot. Lincolnshire is one of the authorities close to the average.

Figure 1.3: Staying-On Rates in Selected Local Authorities in England, 1987-88



Source Material: Statistical Bulletin 3/89, London DES.

1.7 Although staying-on rates in England and Scotland (which is included in *Figures 1.1 and 1.2*) are difficult to compare, it appears that, overall, the rates for 16- 18 year olds taking academic qualifications are not very different – 30.5 per cent in England and 28 per cent in Scotland.

1.8 But if a number of factors are involved what stands out to us is the examination system which seems designed to produce failure. We first became aware of this when we were asked to look at the reasons why so few young people want to train as physics and maths teachers[3]. We traced the flows into these subjects and found over a 40 per cent failure rate at O-level. When the cream of those passing, usually with As or Bs, went on to A-level, a further 50 per cent were failed. We thought we had found our explanation straightaway, but, in making comparisons, we were astonished to find that, as *Table 1.1* shows, 40 per cent failure at O-level and 30 per cent at A-level were the 'going' rates.

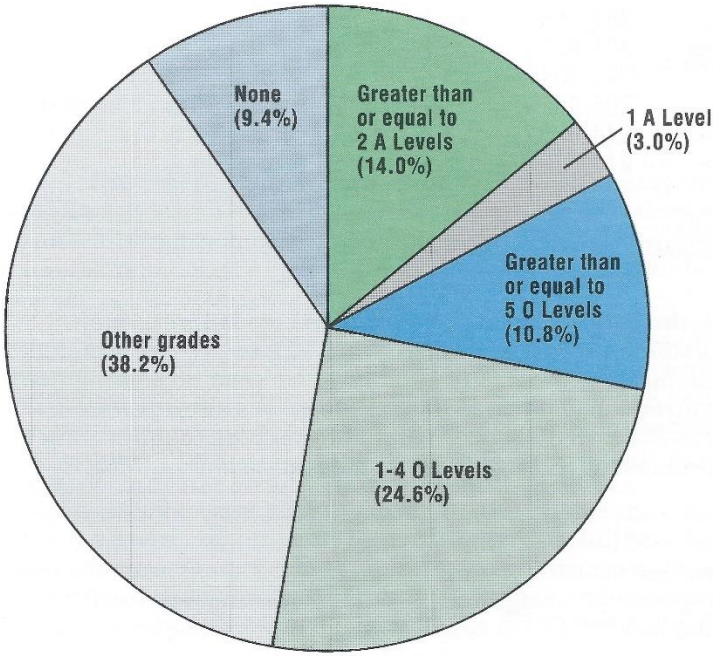
Table 1.1: Performance at O and A-level

Subject	O-level*			A-level*		
	Entries	Passes	% Fail	Entries	Passes	% Fail
Physics	176,235	104,734	40.6	55,468	38,943	29.8
Maths	321,653	183,202	43.0	78,838	53,327	32.4
Chemistry	142,574	87,990	38.3	47,792	35,417	25.9
Biology	233,205	128,708	44.8	46,107	31,866	30.9
Geography	200,280	113,506	43.3	35,030	25,046	28.5
English	503,933	273,539	45.7	64,315	47,361	26.4

*1981 and 1983 respectively to provide information on the graduates who might have trained to be teachers in 1987.
Source Material: Statistics of Education, School Leavers CSE and GCE (1981) and (1983), London: DES.

1.9 What this means in terms of the qualifications obtained is shown in *Figure* 1.4. In 1987, only about 14 per cent of school leavers obtained two A-levels, the basic requirement for going on to higher education, and nearly half (47.6%) obtained no qualifications to speak of. Moreover, the 14 per cent obtaining two A-levels included grades down to E.

Figure 1.4: Qualifications of School Leavers, 1987



Source Material: Statistical Bulletin 13/88, London DES.

1.10 Only just over half (55.3%) of those with two A-levels go on to higher education straightaway, a quarter (24.3%) try for employment, and 15 per cent enter further education - about a third with a view to improving their A-level grades.

1.11 Many young people do not stay on beyond compulsory schooling because they are not qualified to do so. The education system instead of rewarding achievement is a process of failure. How deeply depressing it must be to go through school knowing that at the end you will have little to show for it. Is it surprising then that so many youngsters should play truant when they are supposed to be at school and should leave at the first opportunity when allowed to do so?

1.12 A popular view has been that high failure rates are necessary to maintain standards. But the effectiveness of a system which, in effect, rejects at least 86 per cent of its products must be questioned. Neither the economy nor social justice is served.

1.13 It may be argued that we are describing a historical situation which has been recognised and reformed through the GCSE. But it is important to realise that in crucial ways GCSE is the same type of examination as GCE O-level and CSE: it is competitive and graded. Some pass well, some pass less well and some pass at such low levels that there is doubt whether it is really a pass at all.

1.14 *Table 1.2* shows the grades obtained in GCSE in 1988 (the provisional figures for 1989 do show some improvement but since grades are not tied to external benchmarks, it is not possible to say whether the rise is real or whether examiners were more generous). If an A or B is taken as the requirement for studying a subject to A-level, about a quarter (range 14.3% in mathematics to 35.3% in languages) are suitably qualified. Even if a C is accepted, in most subjects less than a half can go forward.

Table 1.2: GCSE Results 1988

Selected Subjects	Number of Entries	Awards			Ungraded
		A or B	C	Other	
Mathematics	653,716	14.3	22.0	55.5	8.2
English	638,636	20.9	23.3	55.3	0.5
English Literature	384,066	26.5	24.3	48.6	0.6
Modern Languages	351,931	35.3	16.1	48.0	0.6
Geography	295,203	21.6	19.6	55.3	3.5
Biology	295,076	19.2	22.9	55.0	2.9
Physics	244,025	23.5	20.6	54.3	1.6
Chemistry	210,530	26.8	24.6	45.7	2.9
Science	152,818	14.4	17.9	64.8	2.9

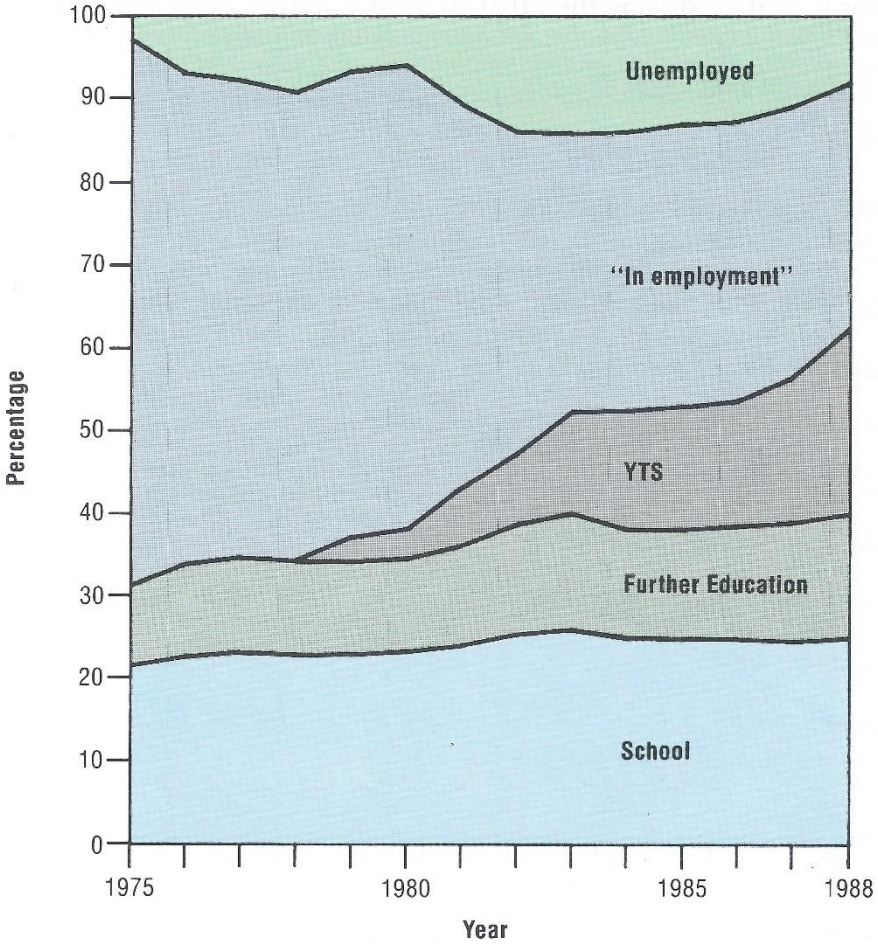
Source Material: School Examinations and Assessment Council.

1.15 The GCSE then also seems designed to produce failures, since although it is possible to obtain graded passes at E, F and G, one wonders how useful or encouraging these really are. Later we shall be arguing that a quite different form of examination based on pass or failure against set criteria – rather like the driving test – would be much more motivating to young people and bring more forward for education and training.

1.16 It has been suggested that the GCSE is already improving staying-on rates at school, and this indeed may be the case. But, as *Figure 1.5* shows, the proportion remaining at school or going on to FE over the past 14 years has remained remarkably constant. The major change has been the Youth Training Scheme (YTS) which now occupies a quarter of young people aged 16-18. Introduced initially as a response to youth unemployment, YTS has gradually become a major instrument in government policy to

improve the quality of training, but it is not yet linked fully into a coherent education and training system. (From 1989 'unemployed' will disappear as a category for this age range since the definition depends on claiming benefit and this will no longer be available).

Figure 1.5: Education and Employment 16-18



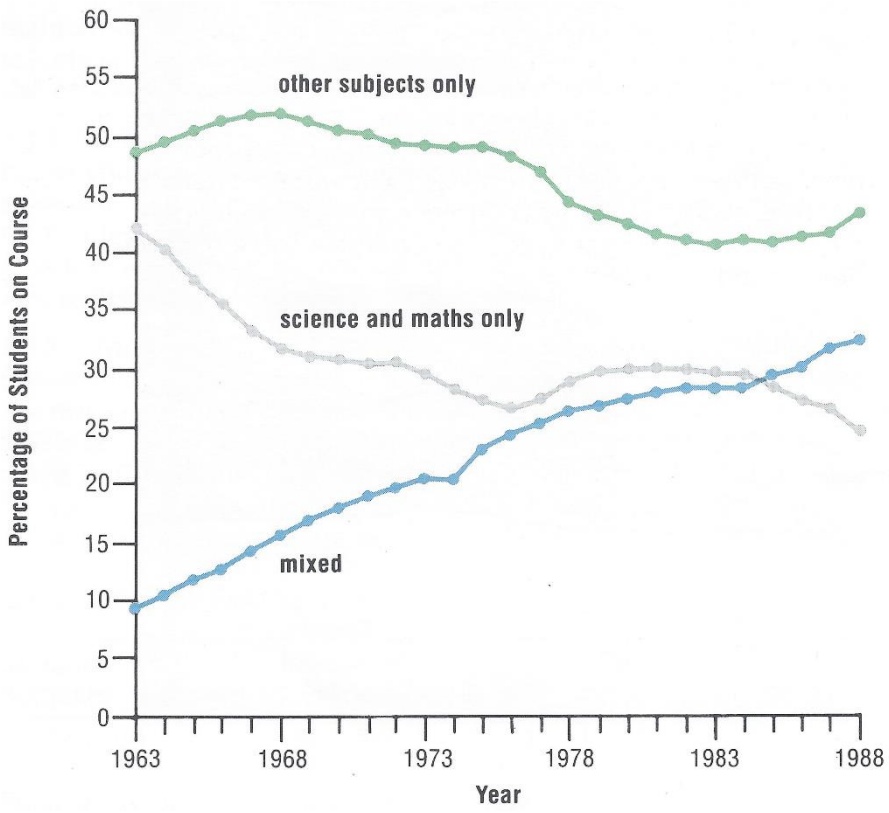
"In Employment" is a residual category derived by subtracting those known to be in the other categories.
Source Material: Statistical Bulletins 2/87, 14/88, London DES.

1.17 The other important aspect of the English education system is that post- 16 (and even earlier before the introduction of the national curriculum), it is highly specialised. In the sixth form it is possible to take only a limited number of A-levels which in the past tended to be on either the science or the arts side.

1.18 Our specialist system arose from a particular response to the knowledge explosion of the late 19th and early 20th centuries[4]. We took a different direction from continental Europe. Whereas countries like Germany and France reacted by adding new subjects to the old classical curriculum of Latin, Greek and mathematics – first history, then natural sciences, and later geography, economics and other subjects, we, wishing to preserve the "grand old fortifying curriculum of the Classics", created the science side as an implicitly lesser alternative. The two cultures of C.P. Snow had become deeply embedded in our schools. In Europe, the encyclopaedic expansion could not continue indefinitely, but in slimming down from what in Germany at one time reached 13 subjects the concept of a broad and balanced curriculum has been retained.

1.19 Within our system young people have to make difficult choices at 16 and they don't always make the ones the country would like them to. *Figure 1.6* shows what has happened to the combinations of A-levels studied over the past 25 years. It is clear that the "swing against science" discussed in the Dainton Report[5] of 1968 has continued, allowing for the occasional apparent recovery due to redefinition of the category (to include among other things woodwork and metalwork), and the trend towards mixed A-levels (that is sciences studied with other subjects) has surged inexorably upwards till in 1984 it began to exceed the proportion studying the sciences per se.

Figure 1.6: Trends in A-level Studies



Source Material: Statistics of Education, Schools (1988), London DES; Smithers and Robinson (1988) *The Growth of Mixed A-Levels*, Manchester: Carmichael Press.

1.20 Elsewhere[6] we have examined this growth of mixed A-levels in detail and concluded that a major contributory factor is the increasing popularity of economics. Although *Figure 1.6* can be interpreted as showing that over half of sixth formers (56.7% in 1988) are studying some science in the sixth form, with regard to the shortage of scientists and engineers which we will be discussing later, it is important to realise that only 20 per cent of those taking mixed A-levels were thinking of continuing in the sciences – most were hoping to move into accountancy, business studies and financial occupations.

1.21 The narrowness of the English sixth form curriculum has long been a source of concern and in 1988 the Higginson Committee[7] recommended that the number of A-levels studied (somewhat slimmed down) should normally be five. The government summarily rejected this proposal, preferring to progress by what in its view amounted to "evolution rather than revolution"[8] and it is seeking to increase the breadth of studies in the sixth form through the AS exam. It hopes that a 'norm' will emerge of two A-levels and two AS exams, although at present there are some teething troubles.

1.22 However, simply increasing the number of subjects to be studied in the sixth form, whether more A-levels or through AS exams, will not of itself make for balanced studies. Without some co-ordinating framework there is no guarantee that sixth form studies will not become even more specialised (with the As and ASs belonging to the same core of subjects) or that choices will not be made arbitrarily across diverse subjects.

1.23 In those countries where there is an adequate supply of young people coming forward for the physical sciences and engineering there is usually some structure to the curriculum which means that they are not able to write themselves off from crucial subjects from an early age. If the aim is to have balanced education and training for the 16- 18 age range, there will have to be some co-ordination, and, as we shall be arguing, this should not only involve co-ordination of academic studies but also embrace vocational subjects, perhaps through modularisation.

1.24 The present arrangements for education and training for the 16-18 age range create a series of channels – academic, vocational training, into employment or unemployment. The academic channel has several streams. The flow through these channels determines demand for higher education and, as we shall be seeing in the next chapter, too few young people generally may be coming forward, and, in particular, too few in the physical sciences and engineering.

II. Demand for Higher Education

2.1 In 1988 there were 183,614 applications for admissions to universities through the Universities Central Council on Admissions (UCCA) and 146,14() to the 38 institutions currently covered by the Polytechnics Central Admissions System (PCAS); 84,634 applications were common so altogether there were 245,120 applicants.[9] In all, there were 130,228 acceptances giving a ratio of applicants to acceptances of 1.9. For every place then there were, on average, nearly two applicants, and the pressure, particularly in the top institutions, is increasing.

2.2 Could therefore participation in higher education be increased by adding to the number of places available? Not all colleges were served by PCAS in 1988, and the figures given also include overseas applicants. But, even so, in terms of these gross figures there appears to be some evidence of unmet demand which should be further investigated.

2.3 However, although overall demand appears to be buoyant, this is not true of all subjects. A consequence of the changing pattern of A-level studies shown in *Figure 1.6*, is that relatively few students are coming forward for the physical sciences and engineering. *Tables 2.1 and 2.2* show the applicants to admissions ratios for home students for selected subjects in universities and polytechnics.[10] In maths, physics and engineering they were not much above one and, bearing in mind the common applications

Table 2.1: University Admissions, 1988

Subject	Applicants	Admissions	Applicants to Admissions
Maths	3420	2898	1.2
Physics	2989	2572	1.2
Engineering and Technology	14274	9466	1.5
Business and Management	6379	1770	3.6
Accountancy	2617	805	3.3
Psychology	4963	1828	2.7

Source Material: Twenty-Sixth Report (1987-8), Cheltenham: UCCA.

Table 2.2: Polytechnic Admissions, 1988

Subject	Applicants*	Admissions	Applicants to Admissions
Maths	963	369	2.6
Physics	472	176	2.7
Engineering and Technology	11560	4175	2.8
Business and Management	19030	3341	5.7
Accountancy	2290	493	4.6
Psychology	3341	595	5.6

*Applications divided by 3.6, the average per applicant.

Source Material: Annual Report (1987-8), Cheltenham: PCAS.

and the places available in the polytechnics, it seems there is a place for every qualified applicant. Attempts to increase the output of engineers by increasing the number of places have not so far been successful. On the other hand, there is considerable pressure on places in business and management, accountancy and psychology, the subjects to which many of those studying mixed A-levels are turning.

2.4 In considering participation in higher education it is also important to realise that 'a place is not a place is not a place'. Departments in some institutions, like those at Oxford and Cambridge, are in great demand, while those in others like the former colleges of education have to actively recruit in order to fill their places. Access to higher education as well as being about overall levels of participation is concerned with how the top places should be shared out.

2.5 Currently, in broad terms, there are three routes into higher education:

(a) academic qualifications, like A-levels and Scottish Highers;

(b) vocational qualifications, like BTEC and SCOTYEC;

(c) as mature entrants through access courses or special schemes like the Joint Matriculation Board's non-standard entry.

2.6 The academic route is mainly used by those who stay on at school beyond 16, though an increasing proportion of A-levels are taken in further education (35.8% of candidates in 1987). Vocational qualifications can be obtained full-time, like the BTEC National Diploma, or part-time, like the BTEC National Certificate, and, as *Table 2.3* shows, this influences the preferred mode of study in higher education. About two per cent of all first-degree enrolments in universities and 11 per cent in polytechnics are part-time.

Table 2.3: Interest of Students on Vocational Courses in Progressing to University

Current Mode of Study in F.E.	Preferred Mode of Study in H.E.*	
	Full-Time	Part-Time
Full-Time (N=1376)	65.6	14.8
Part-Time (N=2746)	13.8	49.0

*Percentages do not add up to 100 since students not thinking of going on to higher education are omitted.

Source Material: Smithers (1989) Access and Progress of Students with Vocational Qualifications in Higher Education. London: NCVO.

2.7 About a quarter of new higher education entrants are 21 years of age or older – 11.3 per cent in universities and 34 per cent in polytechnics. Most enter on the basis of A-levels or vocational qualifications, but some gain entry through special schemes, access courses or the assessment of experiential learning.

2.8 The relative contribution of these three routes to full-time home admissions to universities and polytechnics in 1988 is shown in *Table 2.4*.

Table 2.4: Percentage Admissions to Universities and Polytechnics 1988

Qualification	Universities	Polytechnics
Academic	91.0	70.5
Vocational	4.2	10.0
Other*	4.8	19.3

* Includes non-standard mature, UK degree, overseas qualifications and unidentified.

Source Material: UCGA and PCAS Annual Reports, 1987-88.

The major route into both types of institution is the academic, but a fifth of entrants to polytechnics are in the category which includes non-standard mature. The A-level qualifications of entrants via the academic route to the different types of institution differs considerably: in the universities the average A-level grade is close to B, in the polytechnics it is D, and in the colleges between E and D.

2.9 Those, at present, making use of these channels come mainly from particular sections of the community and attracting a wider cross-section would be one of the ways of increasing participation in higher education.

2.10 *Table 2.5* shows, for example, the relationship with social class, based on the Registrar-General's classification of the head-of-household's occupation. Two out of three entrants via A-levels come from the professional and managerial groups (social classes I and II). Only 1 in 200 is from social class V (unskilled manual workers), even though in 1971 (close to when the entrants we are considering were born) it comprised eight per cent of the population.

Table 2.5: Percentage Distribution by Social Class of University Entrants

Social Class	1971Census UK Population	A-level	Mode of Entry Vocational Qualifications	Non-Standard Mature
I (Professional)	3.6	22.4	14.4	1.5
II (Managerial)	17.2	46.3	33.5	22.8
IIIA (Skilled Non-Manual)	21.8	12.1	13.1	44.3
IIIB (Skilled Manual)	27.5	17.2	36.0	13.3
IV (Partly Skilled)	21.9	1.6	2.5	10.5
V (Unskilled)	7.9	0.4	0.5	7.6

Source Material: Smithers and Griffin (1985), The Progress of Mature Students, Manchester: JMB; Smithers (1989), see Table 2.3; Office of Population Censuses and Surveys.

2.11 The vocational route which might be thought to broaden the base of entry does so, but only as far as the children of skilled manual workers (social class IIIb). Again, only 1 in 200 of the entrants was born in social class V. In the case of non-standard mature entrants, social class has been arrived at for the person's own occupation. In *Table 2.5*, we can see that here there are relatively few entrants from social class I- since many will already have obtained degrees - but again non-manual workers, particularly clerks, cashiers and secretaries (social class Illa), are over-represented.

There are also differences with sex. More males are likely to go to university by all three routes. However, the situation shown in *Table 2.6* masks the steady improvement in the prospects of women. In the case of the A-level route, the proportion of women increased from 41.6 per cent in 1982 to 44.0 per cent in 1987; and in the case of non-standard mature entrants from 35.1 per cent to 49.2 per cent over the six years of the study. With vocational qualifications, however, largely as a result of the subjects involved, there is a preponderance of men.

Table 2.6: Percentage Distribution by Sex of University Entrants. Mode of Entry

Sex	Mode of Entry		
	A-level	Vocational Qualification	Non-Standard Mature
Male	57.5	80.1	57.8
Female	42.5	19.8	42.2

Source Material: Smithers and Griffin (1986), see Table 2.5; Smithers (1989) see Table 2.3; UCCA Annual Reports.

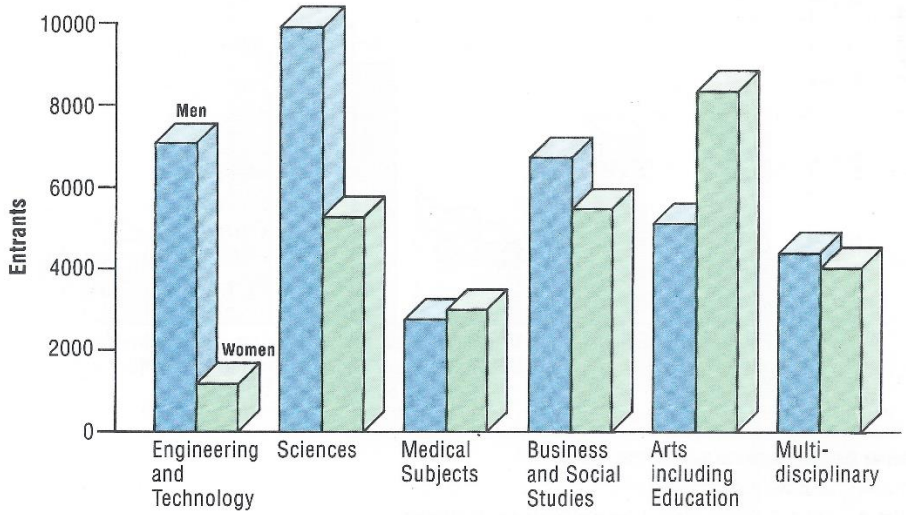
2.12 It is also likely that the ethnic minorities are under-represented, but this has been too sensitive a topic on which to gather information. Although nationality has been previously covered, it is only from 1990-91 that UCCA and PCAS will be able to ask the questions to show the extent of applications and admissions for the different ethnic groups of home students.

2.13 Why there should be such a markedly uneven distribution across different sections of the community is not clear. Almost certainly it does not reflect conscious bias on the part of those admitting students. Where selection takes place it is mainly on the basis of merit as expressed through A-level performance. In general, too few from the under-represented groups are coming forward.

2.14 The social class effect could be due in part to differing abilities since there is some correlation between class and intelligence. The more talented tend to progress to the better jobs and since intelligence is to some extent inherited it is perhaps not surprising that the children of professional and managerial workers should be at an advantage when it comes to taking exams.

2.15 The reasons why relatively so few girls have progressed to higher education, particularly in the physical sciences and engineering, have been extensively investigated, but no clear determining biological or social factor has ever been identified.[11] There are some small psychological differences between the sexes, in particular the tendency of women to value people more than things and to see the sciences as impersonal, but none, either singly or in combination, is adequate to account for the differences in subject choice. It may be that for historical and irrelevant reasons, the physical sciences have been thought not to be appropriate for women and that their disinclination to go into the physical sciences and engineering is because they have simply not been aware - in any deep-seated sense – that it was all right for them to do so.

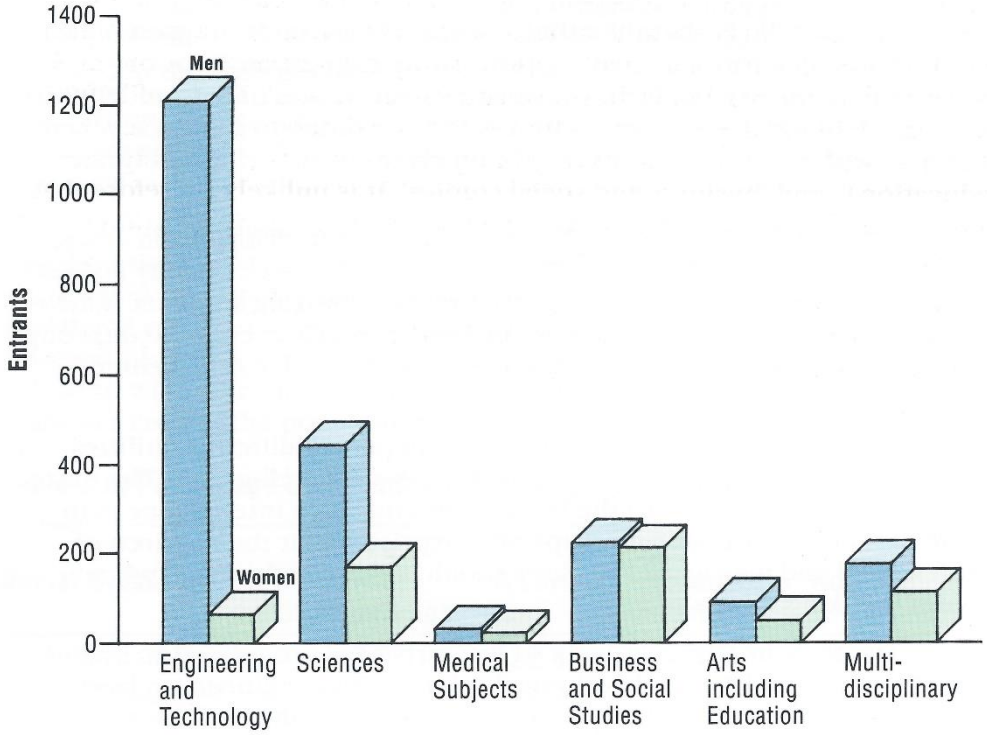
Figure 2.1: A-level University Entrants by Field of Study, 1986



Source Material: Statistical Supplement to the Twenty-Fourth Report (1985-86), Cheltenham: UCCA.

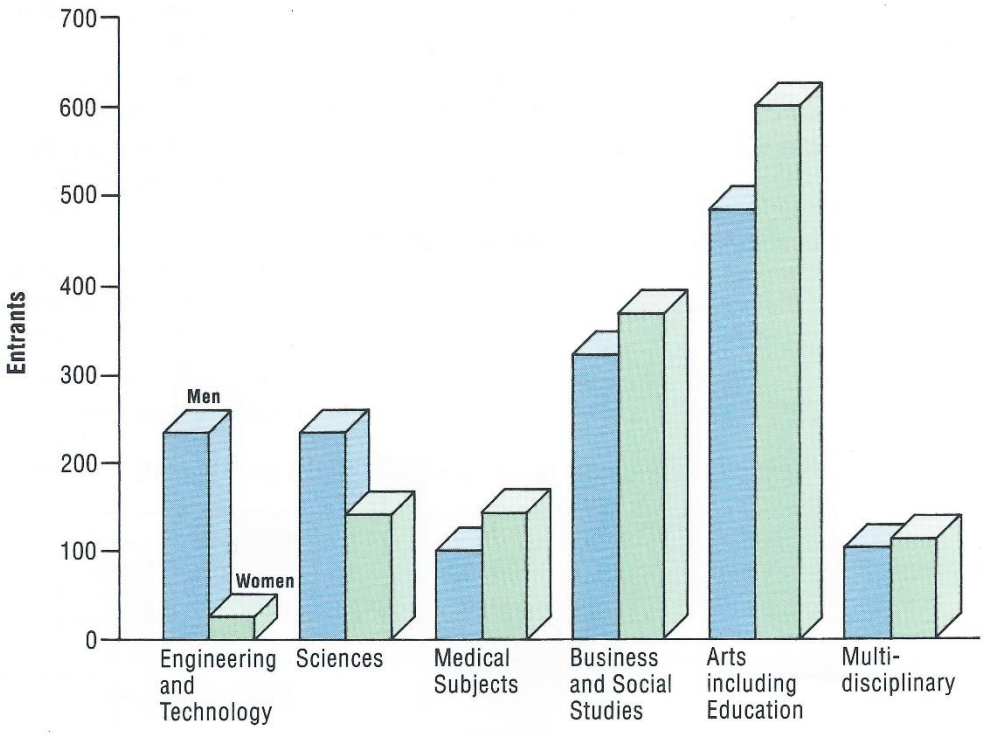
2.16 Entries by subject in universities for the three routes are shown in *Figures 2.1, 2.2 and 2.3*. Among men, the two most popular fields for those entering by the A-level route (remembering academic qualifications account for over 90 per cent of entries) are the 'sciences', and 'engineering and technology', but the latter attracts so few women, when both sexes are considered together, this field comes below the 'sciences', 'arts and education', and 'business and social studies'.

Figure 2.2: Students Entering Universities on Basis of Vocational Qualifications by Field of Study, 1986



Source Material: See Figure 2.1

Figure 2.3: Non-Standard Mature Entrants to Universities by Field of Study, 1986



Source Material: Statistical Bulletin 11/88, London DES.

2.17 Over half of the men entering on the basis of vocational qualifications study engineering, but the most popular field for women is 'business and social studies'. The profile for non-standard mature entrants is however quite different from A-level entrants with most of both sexes gaining places in 'arts (including education)', and 'business and social studies'. It is unlikely therefore that any shortfall in recruitment to the sciences and engineering could be made up by an expansion of mature entry.

2.18 Demand for higher education will also be related to the number of 18 year-olds in the population, and it is to the question of demography that we turn next.

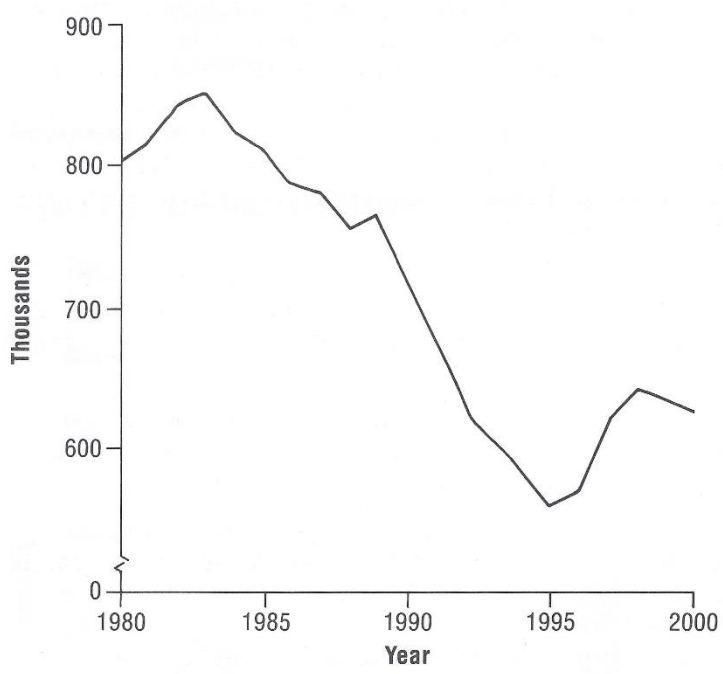
III. Demography

3.1 In world terms the population problem is a booming birth rate[12]. In countries like Bangladesh and Nigeria there is an annual growth in the population of over three per cent. India with nearly 800 million today is adding in excess of 15 million each year; China's 1,100 million is increasing at a rate of 13 million annually in spite of desperate attempts to limit population growth.

3.2 But in advanced industrialised nations the problem is quite different: the birth rate in the sixties fell to such an extent that there are fears as to whether there are going to be enough young people to keep the countries going.

3.3 In England and Wales, the number of 18 year-olds, as *Figure 3.1* shows, is set to decline by 32 per cent from 1983 to 1995. This has sometimes been viewed as a catastrophe with allusions to the 'demographic time bomb'. The changing age structure of the population is an important fact of life with many implications, including those for participation in higher education. But it should be seen in context.

Figure 3.1: Eighteen Year Old Population in England and Wales



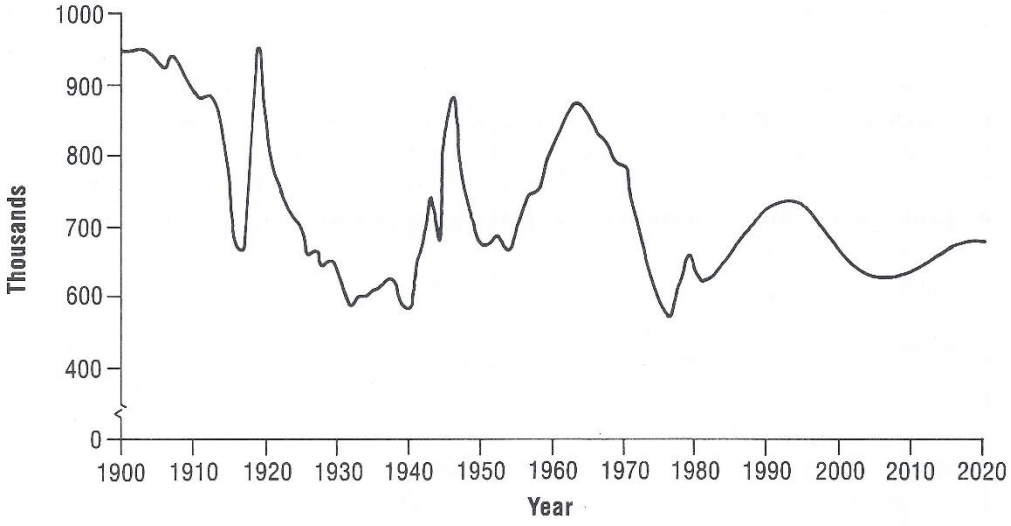
Source Material: Office of Population Censuses and Surveys.

3.4 *Figure 3.2* looks at live births in England and Wales but over an extended time-scale. The familiar plunge for 18 year-olds can be seen in the live births from 1964 onwards. But taking the longer view we can see that there have been a number of such fluctuations over the past eighty years. Quite why birth rates should go up and down in this way is a fascinating subject in its own right and probably only the astrologers feel certain they know why it happens, but both social and biological factors are likely to be involved.

3.5 In earlier times, a high birth rate among poorer people seems to have occurred not only as a consequence of the lack of an adequate means of contraception, but also as an insurance policy, as a way of having someone to contribute to family income and to look after you in your old age. The high mortality rate among children meant large

families were needed to ensure some survivors. It may be that considerations of this kind still apply in some countries today. But, in the UK, children have increasingly become seen as an expense rather than economic benefit, and with contraception readily available, there has been a marked trend towards reducing family size, particularly in the lower income groups. This probably accounts for the general drift downwards in *Figure 3.2*, but with obvious and fascinating interruptions associated with the two world wars. In the absence of a major jolt of this kind it seems likely that the birth rate in England will settle at well below its 1964 level.

Figure 3.2: Live Births in England and Wales



Source Material: Birth Statistics Series FM N0. 13 and No. 15, OPCS, London: HMSO; and private communication.

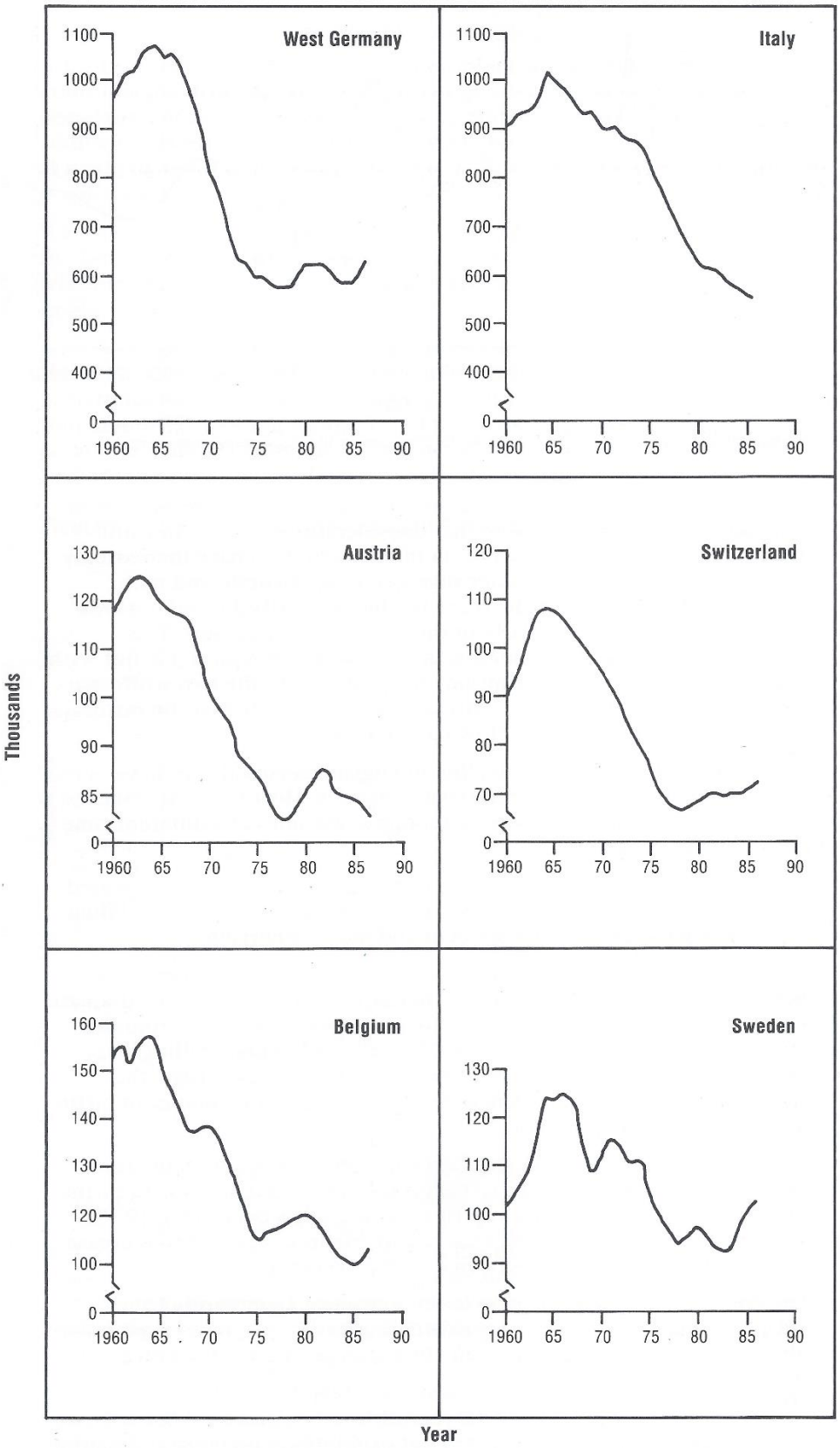
3.6 Whatever has led to the decline in England seems also to have been operating in other advanced industrial countries. Most have experienced a similar downturn from the sixties although sometimes at a different time and to a different extent.

3.7 *Figure 3.3* shows that the pattern in England and Wales is repeated remarkably closely in West Germany, Italy, Austria, Switzerland, Belgium and Sweden, with drops of 40 per cent and more occurring.

3.8 In France and Eire, as *Figure 3.4* shows, the pattern is somewhat different but there are decreases also. In Catholic Spain something dramatic seems to have happened in the late 70s, perhaps following on from the ending of Franco's dictatorship in 1975, with the birth rate falling away sharply from its previous near plateau. In neighbouring Portugal the decline has been continuous since the early 60s and the number of births has gone down by 45 per cent.

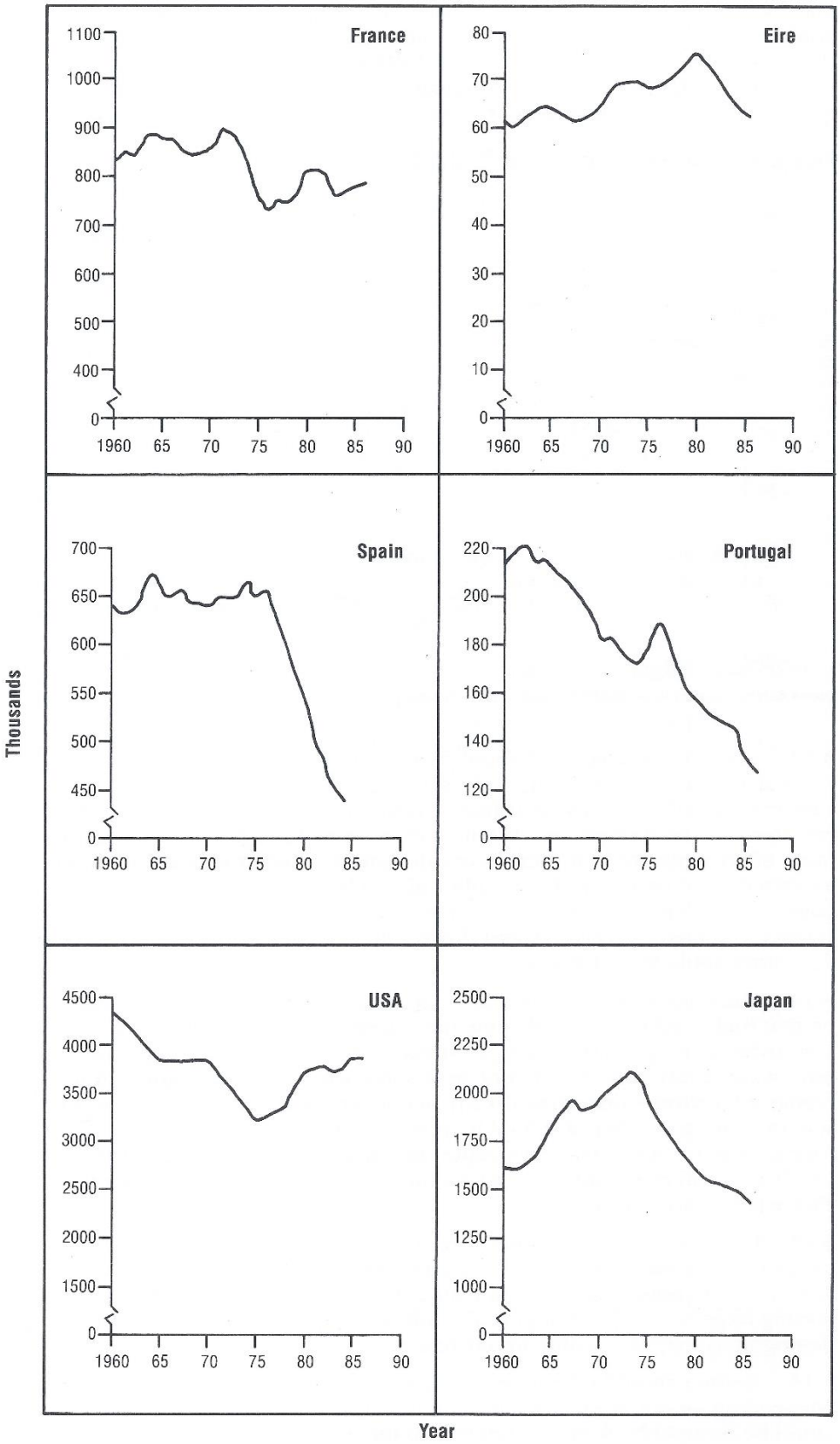
3.9 The patterns in the USA and Japan also show falls but at different times. The United States seems to have experienced the decline in births somewhat earlier than other countries and there has been since 1975 some recovery. In Japan, on the other hand, births continued to increase till 1975 since when there has been a marked reversal.

Figure 3.3: Live Births in Selected Countries



Source Material: Eurostat Demographic Statistics (1960), (1976) and (1988), Brussels: Statistical Office of the European Communities; Demographic Yearbook (1987), Paris: UNESCO.

Figure 3.4: Live Births in Selected Countries



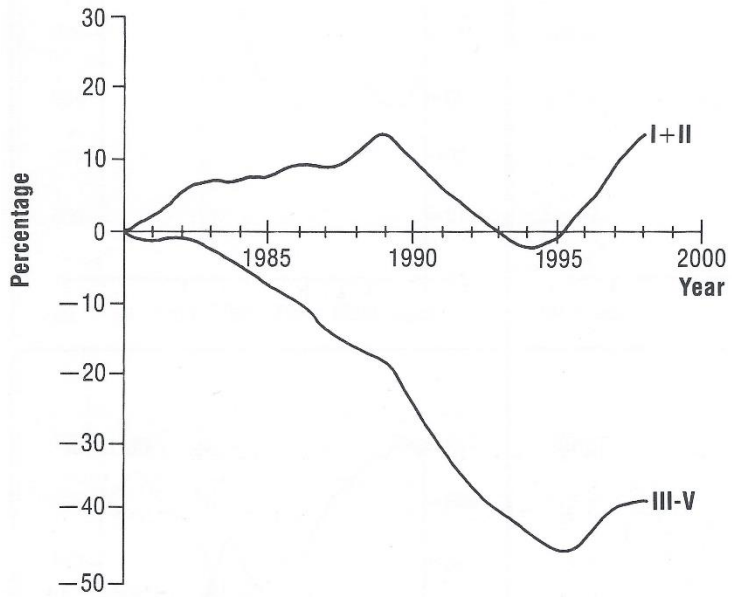
Source Material: As Figure 3.3 plus Statistical Abstract of the United States 108th edition (1988), Washington: US Dept. of Commerce and Bureau of the Census.

3.10 Since most of our partners in the European Community have similar birth patterns to ours, any shortfall in workers will be community-wide, and with free movement from 1992, competition will be on a European scale.

3.11 The fall in the number of 18 year-olds in England has been used as part of the government's argument to cut expenditure on higher education, with its early projections assuming a pro-rata decline in demand.

3.12 This was however to ignore the social classes which when disaggregated give the quite different picture of *Figure 3.5*. When social classes I and II, professional and managerial, are considered together, it is apparent that the numbers of 18 year-olds here will continue *increasing* until 1989 when there will be a dip to 1994 after which the growth is resumed. The demographic drop is mainly in social classes III – V which will experience a decline of nearly 50 per cent to 1995.

Figure 3.5: Eighteen Year Olds by Social Class



Source Material: Working Paper, The Royal Society, (1983).

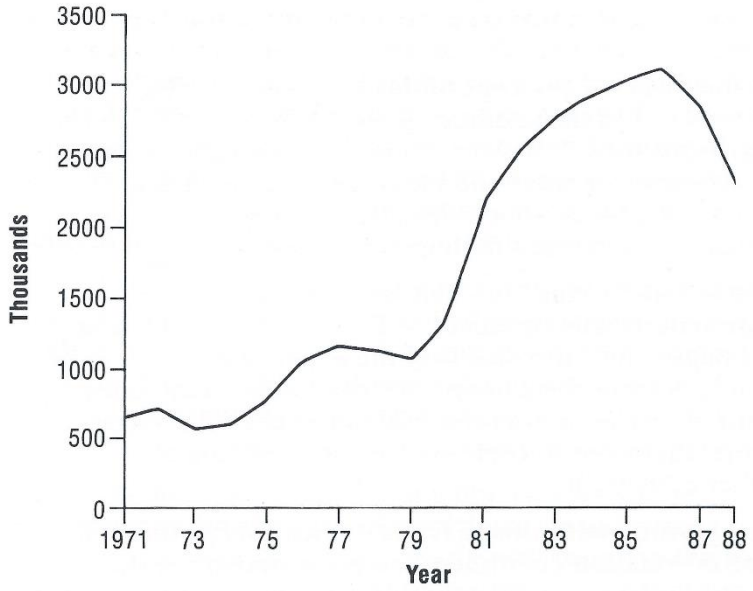
3.13 Since, as we have seen, about two-thirds of applicants to universities come from social classes I and II, it is unlikely that any 'demographic catastrophe' will occur as far as higher education is concerned. Given the fact that the children of parents who have received a higher education are more likely to aspire to it themselves, demand for higher education can be expected to go on rising. The number of pupils on A-level courses has gone up by 2.5 per cent since 1986 (though with a fall of 10.9% in the science and maths category), and this is reflected in current higher education application figures.

3.14 The number of 18 year-olds is, however, set to decline, and it may be that higher education will come into increasing competition with employment. Employers seeking to attract school leavers may begin to offer wage levels such as to tempt away some who might have gone on to higher education. Concern is already being expressed by employers at the way the falling number of school leavers is contributing to the pressure for high pay settlements, for example, among clerical and manual staff. Employers will eventually have to decide whether it is 16 to 18 year-olds they want or graduates.

3.15 Fewer workers and higher wage costs are likely to give further impetus to the introduction of modern technology. At one time, it was feared that increased automation would threaten social cohesion by leaving large numbers unemployed, without a role in society. In this sense, demography may have come to our rescue.

3.16 Neither should it be forgotten that there are already around (depending on definition) two million unemployed in this country, who could be brought back productively into the workforce with appropriate training. *Figure 3.6* shows that the level has come down somewhat since1986, possibly due to the fall in school leavers. The government has recognised the need to provide quality skills training for unemployed adults and, in 1988, introduced a £1.45 billion Employment Training (ET) programme.

Figure 3.6: Mean Annual Unemployment



Source Material: Employment Gazette (December 1988)

3.17 For these reasons, demography is not likely to hit higher education as hard as has sometimes been supposed. But this should not lead to complacency. School leavers who have traditionally gone straight into Work may find employers more anxious to recruit them. This could make it even harder to broaden the appeal of higher education.

IV. Progress and Performance

4.1 We have seen that over 90 per cent of the students entering universities and 70 per cent of those entering polytechnics do so on the basis of academic qualifications. It has sometimes been suggested that A-levels are an artificial barrier to entry and moving round them is pre-requisite for wider access. This argument usually includes the assertion that A-level performance is unrelated to degree success.

4.2 This is quite false and derives from a misreading of the statistics. The anti-A-level argument usually proceeds as follows: the correlation between A-level and degree performance is of the order of 0.5 - 0.4 (which it is), squaring this to calculate the amount of variation accounted for gives a value of about 10 per cent, therefore 90 per cent of the variation is due to other factors, therefore A-levels are a poor predictor of performance in higher education.

4.3 There is nothing wrong with this as far as it goes except that it fails to recognise that the correlation coefficient is a poor statistic in the circumstances. For a correlation coefficient to be meaningful values need to spread across the full range of a variable. Only about 20 per cent of the age group study for A-levels and only just over half of these go on to take a degree so we are here comparing a top slice with a very thin top slice. Given this attenuation, correlation coefficients of 0.3 -0.4 are, in fact, quite high. Further, of all the ability, personality, and motivational variables studied, With the exception of first-year degree-level examination results, A-levels are the best predictor of degree class.

Table 4.1: Degree Glass by A-Level Score, Study I

Score *	Degree Class					Wastage
	1	2i	2ii	3	Other	
High (N=945)	12.1	46.0	31.5	3.3	4.8	2.4
Medium (N=773)	4.4	33.0	47.2	5.8	4.9	4.7
Low (N=386)	1.6	24.1	38.6	9.6	9.3	16.8

*A-levels scored from A=5 to E=1, and totalled. High score, 12 or above, medium score, 7-11; low score, below 6. A-level entrants only.

Source Material: Robinson and Smithers (1989). General Studies in the Sixth Form, Report to Leverhulme Trust.

Table 4.2: Degree Class by A-Level Score, Study II

Score *	Degree Class					Wastage
	1	2i	2ii	3	Other	
High (N=739)	10.7	46.0	34.9	6.6	0.7	1.1
Medium (N=1,774)	4.3	32.9	48.3	9.4	2.8	2.3
Low (N=755)	3.0	24.6	38.5	11.1	9.3	13.4

*See footnotes to table 4.1

Source Material: Smithers (1989), Access and Progress of Students with Vocational Qualifications in Higher Education, London: NCVQ.

4.4 If the relationship between A-levels and degree performance is shown in a different way the strong association becomes apparent. *Tables 4.1* and *4.2* contain results from two different studies completed in 1989 of A-level performance and degree success across a range of higher education institutions. When A-level scores are grouped into those equivalent to 3 Bs or above, 3 Ds or below, and those in between, and compared with degree class, a strong pattern emerges with the higher scorers generally getting the better degrees. Moreover, the number of students not completing rises from one or two per cent of the high A-level scorers to around 15 per cent of the low scorers.

4.5 The existence of a strong relationship should come as no surprise since A-levels and degree examinations are two of a kind both requiring high level academic skills. Whether getting a good degree means anything more than being able to do well in examinations is of course a moot point which is particularly relevant when we look at the performance of students entering higher education on the basis of vocational qualifications.

4.6 The four per cent entering universities and ten per cent entering polytechnics on the basis of vocational qualifications might have been expected to have done particularly well there on the basis of the theory of barriers to be overcome. Quite frequently in education where a minority gains entry against the odds, as with students from social class V to university, or women in science, it does particularly well.

4.7 But the performance of students with vocational qualifications in universities tends to be somewhat below that of A-level entrants. *Table 4.3* shows that some students do very well and obtain firsts so that the route does open up the opportunity of a higher education for some very able students who might not otherwise have been qualified, but the general run of performance is below that of the A-level entrants and nearly 1 in 5 drops out.

Table 4.3: Performance on Selected University Degree Courses 1982-87

Entered On	Degree Class					Fail	Dropout
	1	2i	2ii	3	Other		
Vocational Qualifications (N=3371)	6.6	24.2	31.9	10.0	8.6	1.6	17.1
A-levels (N=70,112)	7.4	36.0	36.6	8.1	4.1	0.8	7.0

Source Material: Universities Statistical Record; Smithers (1989), see Table 4.2.

4.8 This is true for all the subjects considered – mechanical engineering and building through to chemistry and English – and the relationship holds for sandwich courses, and for both sexes. The only data with which the Council for National Academic Awards (CNAA) was able to supply us, for males in 1984, show a similar trend (*see Table 4.4*).

4.9 Perhaps these results are not so surprising if we consider how it is that the students came to be entering by this route. Usually they were young people aged 21-24 who had left school at 16 and obtained their qualifications in further education. They had left school either because they were not very good at it, including taking exams, or they did not like it. They had been successful on their BTEC courses and wanted to go further, but the modes of teaching and examining here will have been very different from those usually found in universities.

4.10 The apparent failure of the vocational students could be the failure of the higher education system to respond adequately to them. It could be that we need better methods of tuition, more appropriate ways of identifying and assessing talent and different goals for at least some of our institutions of higher education.

4.11 Students entering by the third route, non-standard mature entry, can do very well. *Table 4.5* shows the performance of students admitted to the universities of Manchester, Liverpool, Leeds, Sheffield and Birmingham through the Joint Matriculation Board's special scheme for people over 21 lacking formal entry qualifications. The students admitted got as good, if not slightly better, results than A-level entrants on the same courses and were no more likely to drop out. However, it

has to be borne in mind that they were rigorously selected for their academic skills through interviews and examinations, and only about 40 per cent of those embarking on the admissions process became eligible for entry.

Table 4.4: Performance on Selected CNAA Degree Courses 1984 (Males Only)

Entered On	Degree Class				
	1	2i	2ii	3	Other
Vocational Qualifications (N=505)	4.4	21.4	32.3	10.5	31.4
A-levels (N=2393)	3.0	24.7	47.4	9.2	15.7

Source Material: CNAA; Smithers (1989), see Table 4.2.

Table 4.5: Degree Results of Mature Students, 1978-83

Entry	Degree Class				
	1	2i	2ii	3	Pass
JMB Scheme (N=460)	3.9	34.1	48.7	9.4	3.9
Other Entrants* (N=13,290)	2.9	32.8	50.5	8.2	5.6

*All other students on the same courses at the same time as the non-standard mature entrants through the JMB scheme.

Source Material: Smithers and Griffin (1986), The Progress of Mature Students, Manchester: JMB.

4.12 The relative performance of students entering via the three routes does not suggest that it is appropriate, given existing higher education provision, to regard A-levels as an artificial barrier to access. Admissions tutors, in any case, seem to use them less for their predictive value than as a rationing device when courses are greatly over-subscribed. The scarcity of places in veterinary science, for example, helps to explain why higher A-level grades are required to train to treat sick animals than sick people. The institutions with the most 'liberal' admissions policies are usually under the least pressure from applicants.

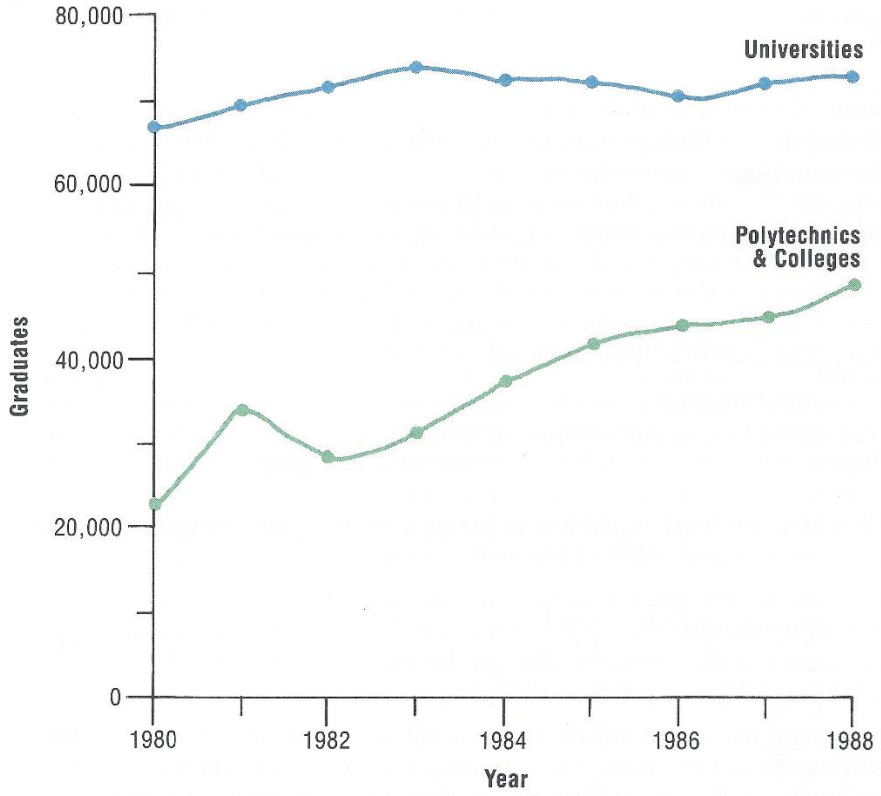
4.13 It has sometimes been proposed that 'capacity to benefit'[13] should be the sole criterion for entry to higher education, but this begs the question of how it is to be judged and competing claims resolved. If existing routes are to be superseded then better and fairer ways will have to be found. In the meantime, increasing participation will involve working through (rather than around) existing arrangements.

V. Graduate Output

5.1 In 1988, the UK produced some 129,000 graduates (including some 8,400 from abroad and 8,000 in the Open University). This represents an increase of nearly a third over 1980 and a fivefold expansion since the Second World War.

5.2 Recent growth has mainly occurred in the polytechnics and colleges. *Figure 5.1* shows that output here has more than doubled since 1980 while that in universities has remained almost static. This has come about because the University Grants Committee reacted to the public expenditure cuts required by the government by at first recommending to universities that they should reduce intakes to protect unit costs. The ceiling on the universities forced demand elsewhere. Restrictions were later eased and graduate output from the universities has begun to rise again.

Figure 5.1: Trends in Graduate Output



Source Material: CNAA; Central Services Unit of Association of Graduate Careers Advisory Services.

5.3 In spite of the great growth in graduate output, there is a widespread view that the UK needs more. This is not easy to quantify since the notion of a graduate job tends to change in relation to the supply of graduates. Accompanying the major increase in recent years, graduates have been recruited to a much wider range of occupations than previously, including banking, nursing and the police. Conversely, as a crucial shortage of teachers has arisen, the government has introduced the grade of licensed teacher which is a way by which non-graduates can enter what was – previously intended to be an all- graduate profession.

5.4 Certainly there are shortages of graduates in particular fields like the physical sciences and engineering exacerbated by their tendency not to go into science-based occupations. *Table 5.1* shows the drift of engineering graduates into accountancy and commerce generally.

Table 5.1: First Destinations of Engineering and Technology Graduates Entering 'Permanent Home' Employment

Year	N*	Per Cent		
		Industry	Commerce	Other
1974	5845	83.3	3.6	13.2
1976	5464	84.7	3.2	12.1
1978	6113	88.0	2.4	9.6
1980	6167	85.3	4.1	10.7
1982	6457	81.7	5.6	13.0
1984	7945	82.2	7.1	10.7
1986	7478	79.0	8.8	12.1
1987	7643	75.6	12.7	11.7

*Excludes overseas graduates leaving UK, short-term, and overseas employment for UK-domiciled students, further education and training, not available for employment, and unemployed.

Source Material: University Statistics, Vol II, (1974)-(1987). Cheltenham: USR; First Destinations of Polytechnic Students (1974)-(1987), Polytechnic Statistics Working Group, London: AGCAS.

5.5 Some 40 per cent of the UK's 3,000 chemistry graduates go into unrelated areas of employment, particularly accountancy. The chemical and pharmaceutical industries are finding it increasingly difficult to get the graduates they want, and there is an acute shortage of chemistry teachers. In 1988 recruitment to teacher training places in chemistry was 40 per cent below target and a third of those recruited had a third-class degree or lower. A similar story could be told for physics and maths so there is the danger that science education in this country has entered a downward spiral that will be difficult to break.

5.6 Graduate output in the UK is often said to lag behind other advanced industrial countries. Comparisons are fraught with difficulty, since there are differences in the way fields are organised and levels of qualification. But in *Table 5.2* we attempt an international perspective using returns to the *UNESCO Statistical Yearbook* at Level 6 as our basic data. These have been expressed as per 1000 of the relevant age group.

5.7 In these terms, the UK is roughly on par with West Germany, but produces considerably fewer graduates per head of the age group than France, japan and the USA, and the age group is about twice the size in Japan and four times as great in the USA.

5.8 However, the data contain some surprises. First, the relatively low output of scientists in japan. Since this may have something to do with the way the boundary has been drawn – computing is regarded as part of engineering in Japan – it is perhaps more appropriate to consider the engineering and science categories together. Looked at in this way, output from the UK at 43 is not so different from that of West Germany at 37, the USA at 52, and France and Japan at 53. The massive difference in graduate output between the UK and Japan is mainly due to the 60 extra per 1000 of the age group in the 'social sciences, law and business studies,' and 21 extra per 1000 of the age group in 'arts, humanities and education'.

5.9 The gap in engineering and science output is not so great. There is an important difference however. In Japan there are 4.7 applicants for every engineering place whereas in the UK there are about as many qualified applicants as places. Thus while Japan would be able to expand its output of graduate engineers in line with demand, output in the UK is limited by the number of suitably qualified applicants coming forward.

Table 5.2: Graduate Output by Country

Subject Area	Per 1000 of Age Cohort				
	UK (1983)	France (1981)	West Germany (1983)	Japan (1983)	USA (1985)
Engineering and Technology	20	20	27	45	25
Science, Maths and Computing	23	33	10	8	27
Medical and Health Related	8	5	13	13	15
Social Sciences, Law, Business Studies	35	58	46	95	87
Arts, Humanities, Education	36	77	42	57	43
Other	10	9	7	18	33
Total	**132**	**202**	**145**	**236**	**230**

*Mass communication and documentation, home economics, service trades, transport and communication, agriculture, forestry, fishing, other and not specified.

Source Material: Annual Statistical Yearbook (1987), Paris: UNESCO.

5.10 Nevertheless, the differences are not as large as is sometimes imagined and it appears that we may be producing more science and engineering graduates than West Germany. Prais (l988)[14] has argued that the root of our poor economic performance compared with our industrial competitors lies elsewhere.

5.11 *Table 5.3*, adapted from Prais, shows output in engineering in terms of the categories 'doctorate' through to 'craftsman'. It suggests that only at the level of doctorate does the UK compare favourably with the other countries, and particularly in the support levels of technicians and craftsmen it falls seriously behind. This can lead to graduates being deflected to lower level tasks.

Table 5.3: Qualifications in Engineering and Technology in Selected Countries, 1985

Level	Thousands*				
	UK	France	West Germany	Japan	USA
Doctorate	0.7	0.3	1.0	0.3	0.5
Master's Degree	2	-	-	5	4
Bachelor's Degree	14	15	21	30	19
Technician	29	35	44	27	17
Craftsman	35	92	120	44	na

*Raw numbers for Japan and USA reduced in proportion to UK population; populations of France and West Germany taken as sufficiently similar to UK not to require adjustment.

Source Material: Prais (1988) National Institute Economic Review, February, 76-83.

5.12 This raises the question in sharp form whether it is in fact more graduates that the country needs. It may be that increasing participation and wider access should be seen in terms of making available the education and training to enable everyone to enhance their understanding and skills, and that it should not be tied to the somewhat elusive notion of 'having a degree'.

VI. Widening Access – the Arguments

6.1 It is widely accepted that there is a need to increase participation in higher education. Statements from the Council for Industry and Higher Education (1987), Foundation for Science and Technology (1987), Industry Matters Forum (1988), the Engineering Council and Society of Education Officers (1988), the Equal Opportunities Group of the National Advisory Body (1988), the Committee of Vice-Chancellors and Principals and Standing Conference on University Entrance (1988) all argue for wider access.[15] After a period of cutting university places, it is even government policy.

6.2 But behind the rhetoric it is clear that widening access is expected to serve heterogeneous, and perhaps incompatible, ends. Among the arguments put forward for widening access have been:

- participation rates in the UK are below those of other advanced industrial nations;
- higher education is believed to be a source of economic strength and vitality;
- the UK is producing insufficient graduates for employers' needs;
- there are acute shortages in particular subject areas subject areas such as the physical sciences, engineering and modern languages;
- the decline in the number of 18 year-olds by one-third will reduce the supply of graduates;
- higher education is intrinsically worthwhile and as many people as possible should be able to benefit;
- particular sections of the community including women, the lower income groups, and ethnic minorities are under-represented, and social justice demands that they should have greater access;
- higher education is too narrow and needs to be opened up to provide a diversity of learning opportunities for people at different stages of their lives.

6.3 Essentially, these boil down to the **economic** and the **equity** arguments which can be expressed as:

- expanding education is important to provide a professional and highly-skilled workforce;
- higher education is so intrinsically worthwhile and personally useful that it should be fairly available to everyone who is able to benefit.

Economic Argument

6.4 The economic argument embraces comparisons with other countries, and demography. We have seen that the UK appears to be lagging behind other countries and that the number of 18 year-olds is set to fall by 32 per cent from 1983 to 1995. These arguments are explored in Chapters V and III respectively.

6.5 But, although a relationship between higher education and economic performance is assumed on the basis that the richer countries tend to produce more graduates, it is a correlation, and it is possible that the connection exists because prosperous nations are able to afford more graduates.

6.6 It is also true that the notion of a graduate job tends to change with the supply of graduates. There are some like Prais who would argue that it is not actually graduates

that we need, but more technicians and craftsmen. Creating a vocational ladder into higher education may exacerbate the problem by tending to denude these support levels.

6.7 There is great competition among employers to recruit graduates at the present time but, as our study of employers[16] showed, this was often less for the specific content of courses (50% of graduate employment vacancies are open to any discipline) than as a way of tapping into the top of the ability range. Employers tend to use higher education as a filter. With a degree as a threshold they can then seek the specific qualities they are looking for in their recruits. By widening access from 14 per cent to say 30 per cent, which is sometimes mentioned as the government's target, the filter will become correspondingly less efficient. In that sense economic arguments for increasing participation may come into conflict with equity arguments.

Equity Argument

6.8 The statistics show that a number of sections of the community are under-represented in higher education and it is argued that places should be distributed more fairly. This is sometimes stated at the level of the system as a whole and sometimes specifically with respect to high status courses in high status institutions.

6.9 It has, on occasions, been suggested that imbalances should be corrected by affirmative action - biases in favour of a supposed disadvantaged group. However, since under-privilege could be variously interpreted in terms of sex, social class, ethnicity, age or discriminations as yet unheard of, this is likely to lead to an unworkable quota system.

6.10 The cause of equality would perhaps be better served by awareness – awareness on the part of institutions that imbalances can occur for irrelevant reasons, awareness on the part of individuals that life is less deterministic than is sometimes supposed and it can be changed. As it was put to us:

> "If one thinks about it very few people get anywhere near the limits of learning which are set by nature and by nurture. Most people have an effective learning boundary set by their genetic inheritance and how they've been brought up and so on, but how many people even approach that learning boundary?"[17]

Entry Qualifications

6.11 Whatever the merits of A-levels as an entry qualification, the changing educational scene does mean that competing claims for admission do have to be judged across a wide variety of scales. Eligible entry qualifications now include:

A-levels (which are themselves changing)

AS Exams

Scottish Highers

International Baccalaureate

European Baccalaureate

National Vocational Qualifications

Other Vocational Qualifications

Certificate of Pre-Vocational Education

Access Courses

Special Schemes

Experiential Learning

Records of Achievement

(Influence of Technical and Vocational Education Initiative)

These may be presented separately or in a variety of combinations.

6.12 Applicants will also be coming from a diverse range of previous experiences including:

Comprehensive School

Secondary Modern School

Grammar School

Grant Maintained School

Sixth Form College

Independent School

City Technology College

Tertiary College

FE College

HE College

Employment.

6.13 How the competing claims of the different applicants are to be reconciled is a difficult question which has to be faced. If 'capacity to benefit' is to be the main entry criterion, how is it to be judged? Given the plethora of eligible entry qualifications and wide variety of backgrounds, there is always the possibility that the top departments will eventually have to resume setting their own tests in an attempt to select fairly.

Opening Up Higher Education

6.14 There are currently some 715,000 full-time equivalent (fte) students in higher education in the UK. To achieve an increase of half as many again by the year 2000, which is the target set by some[18], would mean attracting an extra 357,500 ftes. They could be extra undergraduate, diploma or postgraduate students, full or part-time, home or overseas, or even on short post-experience courses. But since different types of expansion would serve different purposes – more overseas students, for example, would bring in extra money but not necessarily add to the supply of graduates available for employment in the UK-wider access is not just about numbers.

6.15 More would not necessarily mean worse, but it would mean different. New kinds of student are likely to mean different types of provision – different curricula, teaching methods and modes of assessment. The Rt. Hon. Kenneth Baker[19] when he was the Secretary of State spelled it out in his speech to the conference held to mark the twenty-fifth birthday of Lancaster University:

> "My expectation is that as numbers and participation rates rise over the next 25 years, the relatively simple stereotypes around which British higher education teaching is still organised will lose their hold. The structures appropriate to higher education with three per cent participation, or even 13 per cent participation, simply cannot be sustained when participation rises to 30 per cent".

6.16 There may also have to be revision of content. It has been suggested[20] that first degrees in the UK, particularly those in the physical sciences, may be too difficult. Given that only relatively few students intend to become academics and researchers themselves, there is a case for ensuring that degrees have a more general applicability, reserving some of the more specialised content for higher-level studies. But fitting courses to students should not be taken too far; the joy, perhaps the *raison d'etre*, of a degree is the opportunity of being able to pursue a subject to the limits.

6.17 This poses the question of what does holding a degree, being a graduate, signify? At present it seems that the quality of a degree is controlled more at the point of entry than at exit. The prestige of an Oxford degree seems to be associated with the fact that the holder was bright enough to get into Oxford in the first place. And the Oxford quality that an employer values is often just that.

6.18 As higher education is expanded, it becomes important to know what a degree stands for. Degree examinations will not only have to be internally consistent (sharing out the highest honours amongst the brightest) but also have to have some external referent. If it were possible to move from norm-referencing to criterion-referencing then it would not matter how the studying was done. Attending a particular higher education institution, other institutions, studying at home or credits for experiential learning would all be seen to be equivalent in terms of performance. (A low level example here is the driving test which is criterion-referenced and it does not matter whether you prepared with a motoring school, your wife, or a friend; or at what stage of your life you took it). It would also make for more flexibility. Higher education and advanced training should not be seen as once-off, but as something to be continually renewed. Clearly defined awards would facilitate the drawing together of credits obtained at different institutions and different stages of life.

More Graduates

6.19 If a degree could be related to external criteria, so that we knew exactly what it showed, we would also be in a better position to decide whether, in fact, it was more graduates that we wanted. Arguments for wider access tend not to be specific about the types of graduates that are to be produced. Would the aim be to produce more graduates generally, or graduates in specific subjects? Equity arguments might suggest the former, economic arguments, the latter. Whatever the personal satisfaction to be derived, would, for example, more degree courses in educational studies (which we single out only as an example from our own faculty) make any contribution to the economy?

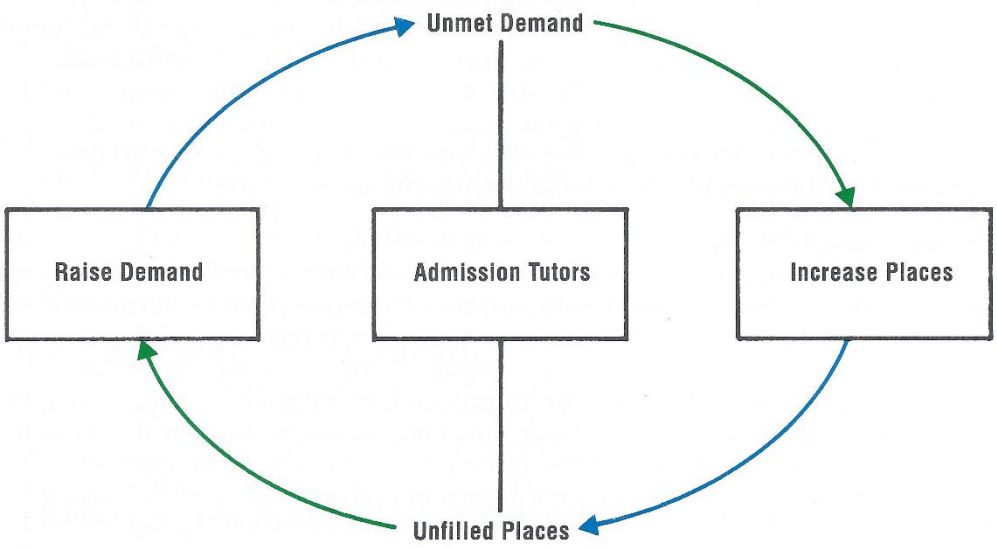
6.20 Manpower planning is notoriously difficult and it may not be possible to say with any certainty how many and what types of graduates we need. But this does not mean we want 'any old' graduates. Rather it should make us think in terms of an open system.

6.21 A college education, though not necessarily a traditional degree nor straight after school, should be regarded as everyone's birth right. At present the system is geared to the bright few Employers' concern is mainly expressed in terms of a shortage of graduates. Until recently the importance of enhanced education and training for all was something of a blind spot. A further and higher education system should be set in place to give everyone a chance to fully develop their talents whether they be in mathematics or hairdressing. Wider access in this sense would both be fairer and serve the economy's need for better education and training.

VII. Increasing Participation

7.1 In essence, increasing participation in higher education involves raising demand and adding to the supply of places. This is set out schematically in *Figure 7.1* which is designed to show that growth can be driven by intervening at either point. Admissions tutors are also included in *Figure 7.1* since they have a key role in filling the available places.

Figure 7.1: Increasing Participation



7.2 In Australia it is proposed to expand graduate output from the present 88,000 to 125,000 by the turn of the century. It is intended to achieve this by allocating extra student places since there is assumed to be substantial unmet demand (although research projects to assess its extent are only just getting under way).

7.3 In the UK, however, it is not clear whether there is unmet demand overall. Although pressure on university places 'is intensifying with applications for entry in 1989 up by 2.9 per cent, in spite of the continuing drop in the number of 18 year-olds, attempts to increase participation in engineering in the UK by increasing the number of places have so far had only limited success. Some departments in what was the public sector are closing, and others are kept alive by foreign students. About one in eight of the graduates of engineering departments is from overseas and leaves the UK on qualifying.

7.4 Some departments in some institutions are greatly over-subscribed. Admissions tutors are at the sharp end of trying to distribute the available places. For departments where there are more applications than places, the admissions tutor will be mainly concerned with rationing; where there are initially fewer applications than places the admissions tutor will be concerned with recruitment and marketing.

7.5 Severe local imbalances occur because under present funding arrangements for higher education only a small part of the income (currently 12% for University of Manchester) is obtained from student fees. If the supply of, and demand for, student places were operating in an efficient market then they would to a much greater extent be self-adjusting. Government policy seems to be moving in this direction with student fees being set closer to the actual costs. But the Treasury, not surprisingly, is reluctant to make an open-ended commitment and there may still be cash-limits.

7.6 Nevertheless, while higher education is not student-led, students' subject preferences do determine the types of graduate it is possible to produce. It may be that from the point of view of the economy it is desirable to educate more scientists and technologists, but unless good students come forward to take the places that are made available the necessary graduates will not emerge. (Although if the places are occupied by overseas students, they may well be a means of earning foreign revenue.)

7.7 As we have seen, the English education system is selective and specialised with only about 14 per cent of school leavers obtaining at least two A-levels. Of those reaching this basic entry qualification for higher education, only just over half go straight on to take a degree. There is also the possibility of entering higher education on the basis of vocational qualifications or as a mature student.

7.8 In principle, then, without changing existing entry qualifications, demand for higher education might be raised by:

- encouraging more of those with the necessary entrance qualifications to apply;
- raising the aspirations of young people at school so that more come forward with appropriate academic qualifications;
- developing the vocational route;
- opening up higher education to those with no formal qualifications through special schemes, access courses and accrediting experiential learning.

7.9 It might also be achieved through changes in provision, for example by:

- developing links between FE and HE;
- taking HE outside the HE institutions.

7.10 Each of these possibilities will be considered in turn. It is always important to keep in mind the distinction between increasing participation generally and trying to raise it particularly in some subjects or among some sections of the population. Special attention will be given to:

- access to science and engineering;
- demand among particular sections of the population.

Encouraging Those with Entry Qualifications to Take Degrees

7.11 Little is known of those with two or more A-levels who do not go on to higher education. In a follow-up[21] to our study of patterns of A-level choices[22] we found some students re-taking A-levels in an attempt to improve the grades to A-level that would give them a chance of admission to the course of their choice, but about one in five saw no advantage in proceeding to higher education.

Raising Aspirations

7.12 Raising aspirations is no easy matter but we would argue that the most important thing that could be done to increase participation in higher education would be to raise the sights of young people generally.

7.13 A major step would be to increase staying-on rates. A number of people have argued that education 16-18 needs to be re-shaped so that there is a common system embracing both academic and vocational qualifications within which assessments can be made at different levels and from which everyone emerges with credit for achievements.

7.14 As well as this structural change, attention will also have to be directed towards aspirations and preferences, which begin to be formed at an early age. There are already in existence a number of local schemes. Some departments like the Physics department at Manchester University send staff into schools, lend apparatus and mount courses for school children (in this case particularly girls). There are also special schemes like that run by the Electrical Engineering Department at Imperial College where students (who are volunteers) go into schools in Pimlico and other parts of London one afternoon each week to help with the science teaching.

Vocational Route

7.15 Currently, about four per cent of students entering universities and 10 per cent entering polytechnics do so on the basis of vocational qualifications. They tend to be, on average, older than the A-level entrants, but usually are between 21 and 24 years of age.

7.16 The impact of the Technical and Vocational Education Initiative, the Youth Training Scheme and related initiatives is only just being recognised in terms of entry to higher education. The National Council for Vocational Qualifications is putting in place a framework for vocational qualifications within which the awards of approved bodies are to be accredited on a common scale at different levels. A major consideration for the framework has been to provide clear routes of progression to higher qualifications including those based on degrees.

7.17 Given that only about 14 per cent of school leavers currently obtain two or more A-levels there is clearly scope for developing the vocational route into higher education, but this should not be done at the expense of the craft and technician levels. Perhaps the role of technician will become, for many, a temporary phase in career development.

Access Courses

7.18 Increasingly, adults without formal qualifications are seeking entry to higher education, and being encouraged to do so, from specially devised Access courses. The Department of Education and Science (DES) launched a pilot scheme in 1978 in seven local authorities since when the number of courses has burgeoned to about 400 in over 50 LEAs. The courses are run in FE colleges, adult and community education centres, and in the open college federations.

7.19 Some are linked with a specific course in a higher education institution (usually a polytechnic); some are multi-outlet aimed at a number of related courses in a range of institutions; some are open exit not tied to any particular course or institution. Some courses are targeted at special sections of the community such as women, the unemployed or ethnic groups.

7.20 At present, it is difficult to know how many are taking part because of poor record-keeping by institutions and the problem of tracking students. On the assumption of 12-15 students per course and 400 courses, it could be of the order of 5-6,000. Bedford College of Higher Education has been funded by the Council for National Academic Awards to establish a national database.

7.21 The point of Access courses, as the Director of the Manchester Open College Federation put it to us, is to be an "open and enabling process" giving "access to good advice, to job opportunities, and building the whole human being". They are not intended to be a "patching-up exercise because of the demographic trough". Although Access courses may be successful at bringing more adults into higher education, they do little to increase applications for science and engineering courses.

Access to Science and Engineering

7.22 Only about 27 of the 400 Access courses are science-based. A survey carried out by the Centre for Access Studies at Roehampton Institute of Higher Education[23] of 619 students entering higher education after taking Access courses found that about half those going on to science and engineering courses dropped out compared to one in five of those taking the social sciences.

7.23 Earlier attempts to establish conversion courses to enable those with non-science A-levels and the biological sciences to take the physical sciences and engineering, such as those at Surrey University, failed to attract sufficient recruits, because as the director of the programme, Professor Elton, explained to us:

> "There are already ample opportunities to study the sciences at school so there are relatively few young students who having opted out want to opt back in again to gain admission to university".

7.24 More recently there has been the National Advisory Body's HITECC (Higher Introductory Technology and Engineering Conversion Courses) scheme. This provides places in polytechnics and colleges of higher education for people with non-science A-levels who want to enter engineering and technology. In 1987, the first year, 615 places were on offer of which 476 were taken up out of 891 firm applications. The scheme was intended for young school-leavers but (in line with Professor Elton's comment) it attracted more mature entrants of whom 24 per cent were women. Fifty-four per cent of the students in 1987 went on to study for a degree and 15 per cent a BTEC Higher Diploma. Twenty-five per cent (119) of the students dropped out.

7.25 The budget for the HITECC programme is of the order of £2 million. The unit costs have been reduced following heavy start-up expenditure. An important feature of HITECC was the provision of student maintenance grants by the Training Agency (financial support for students on Access courses is always problematic). From 1989-90 funding will be through the mandatory awards system.

7.26 A comparable initiative under the auspices of the Engineering Professors' Conference, carrying a mandatory award and resourced now through the Universities Funding Council (UFC) has just completed its first year.

Particular Sections of the Population

7.27 Sometimes initiatives like Access courses are targeted at particular groups within the community which are under-represented in higher education.

7.28 In our inquiries we were able to locate only a handful of initiatives aimed at able but disadvantaged youngsters. One was the special access scheme for inner-city school-leavers run by Islington Sixth Form Centre. About 60 have so far gone on to higher education, ten of whom went to Sussex University through the SAIL (Sussex and Inner London) scheme. It may be the prototype for inner-city areas elsewhere in the UK, since as one of the

students, formerly classed as remedial told us: “The scheme is too small, after all there are inner-cities all over the country”.

7.29 A similar link between schools and higher education institutions is being established at Salford University, where places are guaranteed for young people from inner-city schools providing the general entry requirement is met. As is well known, women are under-represented in the physical sciences and engineering. Projects like WISE (Women into Science and Engineering) are designed to increase participation.

Links between FE and HE

7.30 A number of schemes are attempting to build bridges and form links between and within post-secondary institutions. At a formal level the Credit Accumulation and Transfer Scheme (CATS) launched in 1986 by the Council for National Academic Awards provides for sub-degree and degree-level awards by the accumulation of credit points across a number of courses. We shall be returning to CATS when we come to discuss higher education outside the higher education institutions.

7.31 There are also examples of institutions working together, for example, the North London Open College Network, the Lancashire Integrated Colleges Scheme (LINCS) which brings together eight regional colleges of higher and further education in the North-West, and Newcastle Polytechnic’s PASS project (Polytechnic Associate Student Scheme).

Taking Higher Education outside the HEI

7.32 More radically, the nature of higher education is being questioned. The Credit Accumulation and Transfer Scheme already mentioned (para. 7.31) enables programmes of study to be continuous or interrupted, to be full or part-time, to be face-to-face or at a distance, campus or employer-based, and not tied to any geographical location. It is possible to give academic credit for experiences which have not hitherto been regarded as being part of higher education.

7.33 The Assessment of Prior Experiential Learning Project based at the Learning from Experience Trust and supported by the CNAA is aimed at finding ways of recognising the learning that people have accomplished as they have gone about their lives. It is intended that credits towards degrees can be awarded for, among other things, relevant industrial experience and bringing up a family.

7.34 There is also what the two Sheffield University originators of ‘The Mundella Programme’ describe as “outreach higher education”. Essentially, it involves teaching at degree level in the FE colleges of the city (which in Sheffield are tertiary colleges). With development funding provided by the Training Agency, the present scheme started with ‘informatics’ (information technology plus business studies), and has been extended to journalism, statistics and health care. In its first year it involved 78 students in three colleges, and numbers are expected to reach 500 by 1990.

7.35 The Mundella Programme, in effect, says: “If you like stay there - we’ll bring the University to you”. The ‘franchising’ of courses by higher education institutions could become increasingly common and it will be interesting to see what extent they can retain their essential character while being taught elsewhere.

7.36 There is already thus a great variety of initiatives aimed at increasing participation in higher education. There are a number of developments designed to bring in more people with vocational qualifications or indeed no formal qualifications at all. Some are

directed towards particular subject areas or are for particular sections of the community. A number of links are being established between and within institutions.

7.37 Increasing participation in higher education involves making the system work better and raising aspirations, and it is to these two sides of the same coin that we turn in our concluding chapters.

VIII. Improving the System

8.1 In attempting to increase participation, as with many things in life, we have to start from where we are now, not from where we would ideally like to be. There are undoubtedly numerous small changes which could be made to improve the running of the system, for example greater co-ordination of Access courses. But to have major impact, there have to be major changes, and we should like to propose five:

- reform of education 16-18,
- incentives for staying-on,
- training of admissions tutors,
- freedom for pricing courses;
- reform of degree examinations.

Reform of Education 16-18

8.2 Given the diversity of academic and vocational qualifications, and of the gaps and inequities that have arisen, we need a review of 16- 18 provision which would face up to the question of what is education/training at that age for? No easy task, and "contemporary events have made the problem more difficult and there is no certainty whether education should be primarily vocational, moral or cultural". (A quotation, incidentally, from Aristotle).

8.3 Education pre-16 has been re-structured by the Education Reform Act. From September 1989 the national curriculum will be introduced. This will ensure – supported by testing at the ages of 7, 11, 14 and 16 – that all pupils receive a basic education in core subjects including the sciences.

8.4 But education and training 16- 18 have so far been left largely untouched. What should be done? We need to ask ourselves whether we want an A-level system which caters for a small minority; if so, what of the others? Alternatively, do we want a common assessment system, embracing both the academic and vocational, within which individuals can be assessed at different levels, and from which everyone emerges with certification of his/her achievements?

8.5 What we have now are arrangements which can be accused of elitism and fragmentation, with a proliferation of courses, assessment methods and qualifications which are confusing to employers and higher education alike. It is as if pieces from several different jigsaw puzzles, which are themselves incomplete, had been thrown up in the air together. It is high time for a thorough- going review and one of the good things that could come out of the summary rejection of the Higginson Report would be an enquiry which took into account the whole of education and training 16- 18, not just the academic education of the fortunate 20 per cent.

8.6 Among the questions a review of 16-18 provision would have to address is: what should the balance be between academic and vocational qualifications? And how can they be made more compatible? In particular, how can the quality of academic qualifications be maintained without the present wasteful failure rates?

8.7 It is possible that the problem lies with our present system of academic examinations where candidates compete against each other for grades so that there are winners and losers. It would be better to ask young people to show what they could do against explicit criteria so that the challenge would be between the person and the task, not

between individuals, with one person's success being another's failure. Studies could be arranged as a series of steps each to be passed in turn. Some would progress further and faster than others but all would receive positive recognition of achievements.

8.8 Such a system for the essential core skills of literacy and numeracy (a frequent complaint is that school-leavers are semi-literate and semi-numerate) was probably in mind when the national curriculum and key-stage testing were first mooted, but it seems to have got lost as the elaborations have mounted. The National Council for Vocational Qualifications has been putting in place a framework of National Vocational Qualifications at different levels (with Level 3 the rough equivalent of A-levels), based on explicit statements of competence, which is similar in principle to what we are advocating for academic studies also. Adopting a common system would have the great advantage of making it possible to bring together academic and vocational qualifications, bridging what is after all an arbitrary divide.

8.9 Our current education and training arrangements for the 16- 18 year-olds are disjointed and fragmented, in other words, a mess. What is needed is a co-ordinated system of academic and vocational elements interlocking to form a coherent whole--in fact, a national curriculum to follow on from that for the compulsory years of schooling. Like the national curriculum itself, it could be offered across a diversity of institutions. Such a system would benefit more young people aged 16-18 and provide a better basis for moving forward to further and higher education.

Incentives for Studying

8.10 A key question is that of incentives. As a representative of the Higher Education Branch of the DES put it to us:

> "Students will only want to stay on in education and training given the sort of financial opportunity cost of doing so if it's quite clear to them that it will have a value at the end - that employers are actually going to reward the sort of qualifications they get".

8.11 There is also the question of incentives to continue in education and training. Few 16-18 year-olds in full-time education in schools and colleges receive financial support. Data from the Youth Cohort Study[24] show that only about one in ten of 17 year-olds in full-time education receives a maintenance grant. There are also inconsistencies, with young people who leave school to join a YTS scheme receiving some payment, but those remaining in education to take perhaps the same qualifications not. The Confederation of British Industry (CBI)[25] educational task force has recently recommended the provision of financial credits to cover all education and training for 16-18 year-olds.

8.12 It is unlikely, given the constraints on public expenditure, that the government could be persuaded to introduce maintenance grants for students 16- 18, but it is possible that any arrangements for loans for students in higher education could be extended downwards. It seems anomalous that there should be this gap between 16 when compulsory schooling ends and 18 before financial support becomes available. Some financial support if only in the form of loans could persuade more students to remain in education.

Training for Admissions Tutors

8.13 Admissions tutors are the key to the admissions process. Increasingly they are having to deal with a diversity of eligible entry qualifications and applicants from a wide range of previous experience.

8.14 How they operate largely determines what happens in terms of admissions. Although institutional policy may be for wider access, and entry requirements allow for flexibility and discretion, unless this is implemented by the tutors on the ground, then the institution may appear unresponsive. Some of the caution schools have been showing over the AS exam is perhaps associated with the recognition that however much they may be assured by Vice-Chancellors that ASs are as acceptable as A-levels, they are still in the hands of admissions tutors.

8.15 Although some institutions have a central admissions office, entry to most university departments is largely through an academic member of staff appointed as admissions tutor. This is frequently for a limited period and is regarded as part of the normal administrative load of the department, carrying little or no emoluments and doing nothing for promotion (which by eating into research time it may hinder).

8.16 The skills of the admissions tutors tend therefore to be learned on the job with the way of doing things passed down from the previous occupant of the role.

8.17 There would seem to be a very good case for providing some kind of training for admissions tutors, among other things, aimed at:

(i) informing them of the changes taking place in education;

(ii) making sure that they are fully aware of the institution's policies;

(iii) helping them to cope with the wide variety of eligible qualifications with which they are now confronted.

Freedom in Pricing Higher Education Courses

8.18 Income for courses is presently obtained from student fees (mainly paid by local authorities) and grants from the relevant funding body (now Universities Funding Council, or Polytechnics and Colleges Funding Council). The minor part comes from fees since the prices that institutions are allowed to charge are only a fraction of the costs. This means that there is no market-led adjustment between the supply of places and demand from students. If institutions were given freedom to price their courses, the supply of places would become much more sensitive – as it has done in the case of overseas students where full-cost fees are payable. The government has already moved some way in the direction of allowing recovery of costs but has not gone as far as permitting profits, and there is the worry that increased fee income will be clawed-back from that received from the funding body. If institutions could price courses so as to make profits they could invest in new facilities to meet student demand.

8.19 Allowing higher education institutions this freedom says nothing about who would pay the price. The government would be able to intervene in What would essentially be a market-led system by selectively supporting students for particular subjects, like the physical sciences and engineering, or from particular sections of the community, minority groups, for example.[26]

Reform of Degree Examinations

8.20 The degree examinations are the goal posts of higher education and by moving them it is possible to have a major impact. At present, 'graduate quality' is somewhat elusive.

We have already suggested in paragraphs 6.17 and 6.18 that the standing of a degree is controlled to a large extent, at the point of entry and that as higher education is expanded it becomes even more important to know what a degree signifies. We have argued that there is a good case for trying to move towards a more criterion-referenced form of examining so that quality could be assured.

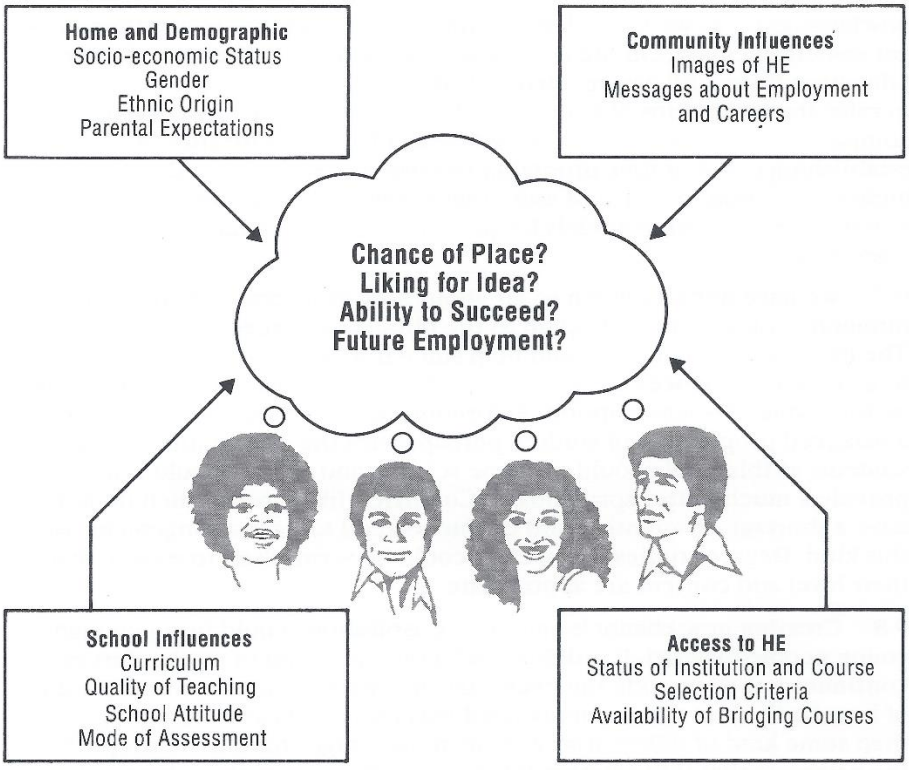
8.21 When education 16-18 is reformed, as surely it must be soon, there will be new channels bringing forward a more broadly-based clientele into higher education. It is likely, as we have already discussed (para. 6.18) that new structures will have to emerge to enable the institutions to respond appropriately. The examination system could be an important lever for effecting change.

8.22 These are five proposals, each of which would contribute towards opening up and expanding the education system, while at the same time protecting standards by ensuring that awards were clearly related to criteria setting out what people knew, understood and could do. As well as re-forming the system, we have to get people to want to make use of it – and this is the subject of our final chapter.

IX. Raising Aspirations and Influencing Choices

9.1 How people make choices is only poorly understood, but we do know something about the factors which channel them in one direction rather than another and influence their decisions. Some of these are represented in *Figure 9.1* which has been drawn to emphasize the subjectivity of choice – ideas welling up in the mind about liking for something, chances of succeeding, and what it means for the future.

Figure 9.1: Factors Affecting Decisions to Apply for Higher Education



9.2 If it is about going on to higher education, the nature of these thoughts will be channelled and influenced, among other things, by:

i. **home and demographic** factors, like social class, gender, ethnic origin and parental expectations;

ii. **school** factors such as the curriculum and the quality of teaching;

iii. messages coming from the **community** at large about the worthwhileness of education and the opportunities it opens (e.g. advantages of accountancy over engineering);

iv. how **accessible** the preferred next step is.

9.3 It is clear that raising aspirations and influencing subject preferences will not be easy. Better information would help. Surveys by the Higher Education Information Services Trust (HEIST)[27] have shown that young people know surprisingly little about higher education. But directing attention at just one factor, for example images of higher education, may well be counteracted by others which are more pervasive, for example, gender. The logic of the multi-faceted situation is that some co-ordinated approach is required.

9.4 Experience with the Co-ordinated Area Programmes in Melbourne, Australia[28] has shown that schools, higher education (and further education), and employers can work successfully together to raise school staying-on rates, to facilitate the transfer to higher level study, and to develop employable skills. Staff from the higher education institutions and industry go into schools to help with the teaching and act as role models. Equipment is lent to illustrate recent and exciting ideas, like laser technology. Some higher education institutions have equipped mobile laboratories to take round the schools. A variety of joint programmes have also been developed with local industry, involving exchanges of staff and young people given direct experience of career opportunities.

9.5 In the UK, links have been established between schools and higher education, schools and industry, and higher education and industry, but nowhere, as far as we know, have all three come together in an effort to get something done. On the recommendation of its Further and Higher Education Board, BP has decided to make a major commitment to trying to raise the aspirations of young people. Plans are being formulated for the company to take the lead in selected areas adjacent to BP sites in establishing collaborative programmes involving schools, further and higher education institutions and other employers. It is hoped that these initiatives will become models for joint action which might be emulated elsewhere.

9.6 We have not said much so far about how to increase the flow of numerate young people through to the physical sciences and engineering. The national curriculum should help since it will no longer be possible to give up the sciences at an early age, though its impact may be weakened by the reduced science option. Reforming education 16-18 to introduce a balanced programme of studies, perhaps with the expectation that all students at this level should do some science and maths, would also provide a much better springboard. Countries, like Japan, which do not have a shortage of scientists and engineers tend to have arrangements of this kind. Degree studies themselves could be scrutinised to ensure that their level and content are appropriate.

9.7 Creating new channels and raising aspirations could bring enough young people forward. If it didn't, and if the operation of market forces continues not to provide the necessary incentives (this raises the question of how badly does the economy need extra scientists and technologists), then some kind of differential support policy might have to be adopted on the principle that if the state wanted you to study something it would pay, but if you wanted to do something different you would have to meet the costs from elsewhere.

9.8 In this brief report we have tried to bring out how it is that the UK has such low participation in higher education. We believe it should be doing much better. This does not mean lowering standards, papering the country with useless degrees, dragging in education fodder; it does mean recognising that everyone has a right to a good high level education and training to fully develop their talents whether they be in pipe-fitting (a very marketable skill) or physics.

9.9 Providing awards are clearly tied to explicit criteria there should be no fear about standards, and providing they mean something and lead somewhere, there should eventually be no shortage of takers. But, in the meantime, getting people to raise their sights remains one of the most urgent problems facing the country. Increasing participation in higher education is about personal fulfilment, social justice – and ensuring a prosperous economy.

Notes

1. 'Country' here is deliberately ambiguous. Where possible the descriptions and statistics refer to the UK, but, Scotland, as far as education is concerned, has its own way of doing things. It is the English system (which also operates in Wales and Northern Ireland) which is highly selective and specialised, and this is why we sometimes talk of the UK and sometimes England.

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